



Fred Henning

STATE OF ARKANSAS

DIVISION
STATISTICS & ANALYSIS

SECOND BIENNIAL REPORT

OF THE

DEPARTMENT OF
STATE LANDS, HIGHWAYS
AND IMPROVEMENTS

FOR THE

PERIOD ENDING
NOVEMBER THIRTY-FIRST, NINETEEN SIXTEEN

**DEPARTMENT STATE LANDS, HIGHWAYS
AND IMPROVEMENTS.**

State Highway Commission.

WM. B. OWEN, Chairman.....	Little Rock
THOMAS BURRESS, Commissioner.....	Jonesboro
GUY B. TUCKER, Commissioner.....	Little Rock
BEN SPIRES, Secretary.....	Little Rock
H. R. CARTER, State Highway Engineer	Little Rock
PROF. J. J. KNOCH, Consulting Engineer	Fayetteville
W. C. HIGHT, Assistant State Highway En- gineer.....	Little Rock
MRS. R. LIVELY, Clerk.....	Little Rock

Land Division.

WM. B. OWEN, Commissioner of State Lands	Little Rock
J. E. HARRIS, Deputy Commissioner.....	Little Rock
J. E. LITTLE, Redemption Clerk.....	Little Rock
A. H. GLASSCOCK, Field Note Clerk.....	Little Rock

Automobile Division.

A. V. DENNY, Clerk.....	Little Rock
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Letter of Transmittal.

To the Governor and General Assembly of the State of
Arkansas:

Gentlemen:

Complying with the law we herewith submit the Second Biennial report of the State Highway Commission, which we trust may prove to be of interest and value to the State equal at least to its cost.

We earnestly request that every one visit the Department and learn for themselves what has been accomplished and what it is hoped will be accomplished in the future, together with the needs of the Department.

Very respectfully,

(Signed) Wm. B. Owen, Chairman,

Thomas Burress, Commissioner,

Guy B. Tucker, Commissioner.

RECOMMENDATIONS REDUCED.

WE RECOMMEND:

1. The adoption of a law assenting to the Federal Aid Law.

2. That all roads leading from one county seat to a county seat in another county and from one county seat to another county seat in the same county, be designated by law as State Roads.

3. That there be created a non-political Advisory Board authorized and empowered to inspect State roads, pass upon applications and recommend the amount of Federal and State aid to be expended thereon.

4. That in order to comply with the demands of the Federal Law, that the Chairman of this Commission be authorized and empowered to act as a depository and authorized to disburse the Federal Aid Funds.

5. That all moneys derived from the automobile license be paid into the State Treasury to the credit of the Highway Improvement Fund and appropriated to meet the requirements of the Federal law and for the maintenance of the Department.

6. To comply with the Federal law, that this department be given the power of inspection and approval.

7. That proper provisions be made for working the surplus convicts on the public roads.

8. That the State Highway Engineer be provided with two assistants, and that an accountant and an assistant be authorized for the department. Also, that a lump sum be appropriated for preliminary surveys, out of which extra engineers may be employed, thus avoiding salaried engineers when not needed.

9. That proper laws governing maintenance, on State and Federal aid roads be passed.

10. That County Engineers be provided for.

Reasons and explanations for the above recommendations will be found in this report under the Caption of "FEDERAL AID."

WE FURTHER RECOMMEND:

That two additional clerks be added to the automobile license division. (See explanation under caption "AUTO DIVISION").

That provisions be made for sufficient funds to hold County road institutes and to provide for demonstrations. (See explanations under head "COUNTY JUDGES REPORTS").

The passage of a law authorizing the sale of the unsurveyed islands in the rivers and streams of the State. (See explanation in "LAND DIVISION").

CHAPTER I.

FEDERAL AID ROAD ACT OF 1916.

AN ACT To provide that the United States shall aid the States in the construction of rural post roads, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Secretary of Agriculture is authorized to cooperate with the States, through their respective State highway departments, in the construction of rural post roads; but no money apportioned under this Act to any State shall be expended therein until its legislature shall have assented to the provisions of this Act, except that, until the final adjournment of the first regular session of the legislature held after the passage of this Act, the assent of the governor of the State shall be sufficient. The Secretary of Agriculture and the State highway department of each State shall agree upon the roads to be constructed therein and the character and method of construction: *Provided*, That all roads constructed under the provisions of this Act shall be free from tolls of all kinds.

Sec. 2. That for the purpose of this Act the term "rural post road" shall be construed to mean any public road over which the United States mails now are or may hereafter be transported, excluding every street and road in a place having a population, as shown by the latest available Federal census, of two thousand five hundred or more except that portion of any such street or road along which the houses average more than two hundred feet apart; the term "State highway department" shall be construed to include any department of another name, or commission or official or officials, of a State empowered, under its laws, to exercise the functions ordinarily exercised by a State highway department; the term "construction" shall be construed to include reconstruction and improvement of

roads; "properly maintained" as used herein shall be construed to mean the making of needed repairs and the preservation of a reasonably smooth surface considering the type of the road; but shall not be held to include extraordinary repairs, nor reconstruction; necessary bridges and culverts shall be deemed parts of the respective roads covered by the provisions of this Act.

Sec. 3. That for the purpose of carrying out the provisions of this Act there is hereby appropriated, out of any money in the Treasury not otherwise appropriated, for the fiscal year ending June thirtieth, nineteen hundred and seventeen, the sum of \$5,000,000; for the fiscal year ending June thirtieth, nineteen hundred and eighteen, the sum of \$10,000,000; for the fiscal year ending June thirtieth, nineteen hundred and nineteen, the sum of \$15,000,000; for the fiscal year ending June thirtieth, nineteen hundred and twenty, the sum of \$20,000,000; and for the fiscal year ending June thirtieth, nineteen hundred and twenty-one, the sum of \$25,000,000. So much of the appropriation apportioned to any State for any fiscal year as remains unexpended at the close thereof shall be available for expenditure in that State until the close of the succeeding fiscal year, except that amounts apportioned for any fiscal year to any State which has not a State highway department shall be available for expenditure in that State until the close of the third fiscal year succeeding the close of the fiscal year for which such apportionment was made. Any amount apportioned under the provisions of this Act unexpended at the end of the period during which it is available for expenditure under the terms of this section shall be reapportioned, within sixty days thereafter, to all the States in the same manner and on the same basis, and certified to the Secretary of the Treasury and to the State highway departments and to the governors of States having no State highway departments in the same way as if it were being apportioned under this Act for the first time: *Provided*, That in States where the constitution prohibits the State from engaging in any work of internal improvements, then the

amount of the appropriation under this Act apportioned to any such State shall be turned over to the highway department of the State or to the governor of said State to be expended under the provisions of this Act and under the rules and regulations of the Department of Agriculture, when any number of counties in any such State shall appropriate or provide the proportion or share needed to be raised in order to entitle such State to its part of the appropriation apportioned under this Act.

Sec. 4. That so much, not to exceed three per centum, of the appropriation for any fiscal year made by or under this Act as the Secretary of Agriculture may estimate to be necessary for administering the provisions of this Act shall be deducted for that purpose, available until expended. Within sixty days after the close of each fiscal year the Secretary of Agriculture shall determine what part, if any, of the sums theretofore deducted for administering the provisions of this Act will not be needed for that purpose and apportion such part, if any, for the fiscal year then current in the same manner and on the same basis, and certify it to the Secretary of the Treasury and to the State highway departments, and to the governors of States having no State highway departments, in the same way as other amounts authorized by this Act, to be apportioned among all the States for such current fiscal year. The Secretary of Agriculture, after making the deductions authorized by this section, shall apportion the remainder of the appropriation for each fiscal year among the several States in the following manner: One-third in the ratio which the area of each State bears to the total area of all the States; one-third in the ratio which the population of each State bears to the total population of all the States, as shown by the latest available Federal census; one-third in the ratio which the mileage of rural delivery routes and star routes in each State bears to the total mileage of rural delivery routes and star routes in all the States, at the close of the next preceding fiscal year, as shown by the certificate of the Postmaster General

which he is directed to make and furnish annually to the Secretary of Agriculture.

Sec. 5. That within sixty days after the approval of this Act the Secretary of Agriculture shall certify to the Secretary of the Treasury and to each State highway department and to the governor of each State having no State highway department the sum which he has estimated to be deducted for administering the provisions of this Act and the sum which he has apportioned to each State for the fiscal year ending June thirtieth, nineteen hundred and seventeen and on or before January twentieth next preceding the commencement of each succeeding fiscal year shall make like certificates for such fiscal year.

Sec. 6. That any State desiring to avail itself of the benefits of this Act shall, by its State highway department submit to the Secretary of Agriculture project statements setting forth proposed construction of any rural post road or roads therein. If the Secretary of Agriculture approve a project, the State highway department shall furnish to him such surveys, plans, specifications, and estimates therefor as he may require: *Provided, however,* That the Secretary of Agriculture shall approve only such projects as may be substantial in character and the expenditure of funds hereby authorized shall be applied only to such improvements. Items included for engineering, inspection, and unforeseen contingencies shall not exceed ten per centum of the total estimated cost of the work. If the Secretary of Agriculture approve the plans, specifications, and estimates he shall notify the State highway department and immediately certify the fact to the Secretary of the Treasury. The Secretary of the Treasury shall thereupon set aside the share of the United States payable under this Act on account of such project, which shall not exceed fifty per centum of the total estimated cost thereof. No payment of any money apportioned under this Act shall be made on any project until such statement of the project, and the plans, specifications, and estimates therefor, shall have been submitted to and approved by the Secretary of Agriculture.

When the Secretary of Agriculture shall find that any project so approved by him has been constructed in compliance with said plans and specifications he shall cause to be paid to the proper authority of said State the amount set aside for said project: *Provided*, That the Secretary of Agriculture may, in his discretion, from time to time make payments on said construction as the same progresses, but these payments including previous payments, if any, shall not be more than the United States' pro rata part of the value of the labor and materials which have been actually put into said construction in conformity to said plans and specifications; nor shall any such payment be in excess of \$10,000 per mile, exclusive of the cost of bridges of more than twenty feet clear span. The construction work and labor in each State shall be done in accordance with its laws, and under the direct supervision of the State highway department, subject to the inspection and approval of the Secretary of Agriculture and in accordance with the rules and regulations made pursuant to this Act.

The Secretary of Agriculture and the State highway department of each State may jointly determine at what times, and in what amounts, payments, as work progresses, shall be made under this Act. Such payments shall be made by the Secretary of the Treasury, on warrants drawn by the Secretary of Agriculture, to such official, or officials, or depository, as may be designated by the State highway department and authorized under the laws of the State to receive public funds of the State or county.

Sec. 7. To maintain the roads constructed under the provisions of this Act shall be the duty of the States, or their civil subdivisions, according to the laws of the several States. If at any time the Secretary of Agriculture shall find that any road in any State constructed under the provisions of this Act is not being properly maintained he shall give notice of such fact to the highway department of such State and if within four months from the receipt of said notice said road has not been put in a proper condition of maintenance then the Secretary of Agriculture shall there-

after refuse to approve any project for road construction in said State, or the civil subdivision thereof, as the fact may be, whose duty it is to maintain said road, until it has been put in a condition of proper maintenance.

Sec. 8. That there is hereby appropriated and made available until expended, out of any moneys in the National Treasury not otherwise appropriated, the sum of \$1,000,000 for the fiscal year ending June thirtieth, nineteen hundred and seventeen, and each fiscal year thereafter, up to and including the fiscal year ending June thirtieth, nineteen hundred and twenty-six, in all \$10,000,000, to be available until expended under the supervision of the Secretary of Agriculture, upon request from the proper officers of the State, Territory, or county for the survey, construction, and maintenance of roads and trails within or only partly within the national forests, when necessary for the use and development of resources upon which communities within and adjacent to the national forests are dependent: *Provided*, That the State, Territory, or county shall enter into a cooperative agreement with the Secretary of Agriculture for the survey, construction, and maintenance of such roads or trails upon a basis equitable to both the State, Territory, or county, and the United States; *And provided also*, That the aggregate expenditures in any State, Territory, or county shall not exceed ten per centum of the value as determined by the Secretary of Agriculture, of the timber and forage resources which are or will be available for income upon the national forest lands within the respective county or counties wherein the roads or trails will be constructed; and the Secretary of Agriculture shall make annual report to Congress of the amounts expended hereunder.

That immediately upon the execution of any cooperative agreement hereunder the Secretary of Agriculture shall notify the Secretary of the Treasury of the amount to be expended by the United States within or adjacent to any national forest thereunder, and beginning with the next fiscal year thereafter the Secretary of the Treasury shall apply from any and all revenues from such forest ten per centum

thereof to reimburse the United States for expenditures made under such agreement until the whole amount advanced under such agreement shall have been returned from the receipts from such national forest.

Sec. 9. That out of the appropriations made by or under this Act, the Secretary of Agriculture is authorized to employ such assistants, clerks, and other persons in the city of Washington and elsewhere, to be taken from the eligible lists of the Civil Service Commission, to rent buildings outside of the city of Washington, to purchase such supplies, material, equipment, office fixtures, and apparatus, and to incur such travel and other expense as he may deem necessary for carrying out the purposes of this Act.

Sec. 10. That the Secretary of Agriculture is authorized to make rules and regulations for carrying out the provisions of this Act.

Sec. 11. That this Act shall be in force from the date of its passage.

Approved, July 11, 1916.

SUMMARY OF FEDERAL AID ROAD ACT OF 1916.

The Federal aid road act was signed by the President and became a law on July 11, 1916.

SUMMARY OF THE FEDERAL AID ROAD ACT. beginning of the fiscal year for which the appropriation is made. Any amount remaining unexpended at the end of the period during which it is available is to be reapportioned within 60 days to all the States in the same manner and on the same basis as if it were being apportioned for the first time; and in the same manner the Secretary of ~~and trails wholly or partly within the national forests;~~ to encourage supervision of roads within the State by competent State officials.

Provisions of the Act.

Total amount appropriated, \$85,000,000.—\$75,000,000 to be expended on the rural post roads in the several States during the five-year period ending June 30, 1921; \$10,000,000 to be expended at the rate of \$1,000,000 a year in connection with the national forest roads.

Amounts to be expended from the major appropriation are:

- \$5,000,000 for the year ending June 30, 1917;
- \$10,000,000 for the year ending June 30, 1918;
- \$15,000,000 for the year ending June 30, 1919;
- \$20,000,000 for the year ending June 30, 1920;
- \$25,000,000 for the year ending June 30, 1921.

A deduction for administration not to exceed 3 per cent of the appropriation for any one fiscal year is to be made by the Secretary of Agriculture, after which

The remainder of each year's appropriation is to be apportioned among the States in the following manner:

One-third in the ratio which the area of each State bears to the total area of all the States;

IV. A State must furnish, through its State highway department to the Secretary of Agriculture, upon his approval of a project, such surveys, plans, specifications, and estimates as the Secretary may require. Items included for engineering, inspection, and unforeseen contingencies shall not exceed 10 per cent of the total estimated cost of the

NATIONAL FOREST ROADS.

The appropriation of \$10,000,000 for the survey, construction, and maintenance of roads and trails wholly or partly within the national forests is to be available until expended under the supervision of the Secretary of Agriculture.

To receive aid a State, Territory, or county must make a formal request through its proper officer and must enter into a cooperative agreement with the Secretary of Agriculture for the survey, construction, and maintenance of the desired roads or trails upon a basis equitable to both the State, Territory, or county and the United States.

The aggregate expenditures in any State, Territory, or county must not exceed 10 per cent of the value as determined by the Secretary of Agriculture, of the timber and forage resources which are or will be available for income upon the national forest lands within the respective county or counties wherein the roads or trails will be constructed. The Secretary of Agriculture is required to make annual report to Congress of the amounts expended for this purpose.

The United States is to be reimbursed for expenditures made under agreement between the Secretary of Agriculture and a State, Territory, or county by the application by the Secretary of the Treasury of 10 per cent of all revenues from the forest beginning with the next fiscal year after the making of the agreement. This reimbursement is to continue until the whole amount advanced under the agreement shall have been returned to the United States from the receipts of the national forest within or adjacent to which the money is expended.

**RULES AND REGULATIONS OF THE SECRETARY
OF AGRICULTURE FOR CARRYING OUT THE
FEDERAL-AID ROAD ACT. (EXCEPT SECTION
8 THEREOF.)**

Issued September 1, 1916.

Regulation 1.—Definitions.

For the purposes of these regulations, the following terms shall be construed, respectively, to mean—

Section 1. The Federal-aid road act, or the act.—An act of Congress entitled “An act to provide that the United States shall aid the States in the construction of rural post roads, and for other purposes,” approved July 11, 1916. (Public, No. 156, 64th Congress.)

Sec. 2. The Secretary.—The Secretary of Agriculture of the United States.

Sec. 3. Office of Public Roads.—The Office of Public Roads and Rural Engineering of the United States Department of Agriculture.

Sec. 4. Ten per cent fund.—Items for engineering, inspection, and unforeseen contingencies, not exceeding 10 per cent of the total estimated cost of the work.

Sec. 5. Authorized representatives of the Secretary.—The Director of the Office of Public Roads and such other officials and employees thereof as he may designate from time to time.

Regulation 2.—Application of Regulations.

Section 1. These regulations apply to all provisions except section 8, of the act and shall not be applied to section 8 unless hereafter authorized or required by order of the Secretary.

Sec. 2. These regulations shall apply as fully where the State can not constitutionally engage in any work of internal improvements as in any other case, when any number of

counties in such State shall appropriate or provide the proportion or share needed to be raised in order to entitle such State to its part of the appropriation apportioned under the act.

Regulation 3.—Information for the Secretary.

Section 1. Before an agreement is made upon any road or roads to be constructed in a State, or the character and method of construction, upon request of the Secretary there shall be furnished to him, by or on behalf of the State, general information as to its laws affecting roads and the authority of the State and local officials in reference to the construction and maintenance of roads; as to schemes for future construction; and as to provisions made, or to be made, for constructing and maintaining roads upon which it is contemplated that the expenditure of money appropriated by or under the act will be proposed. The information furnished shall be sufficient to enable the Secretary to determine whether it is likely that the money apportioned to the State will be expended, and the roads constructed will be properly maintained, in accordance with the terms of the act.

Sec. 2. Information requested by the Secretary or his authorized representative, relating to the maintenance of roads constructed under the provisions of the act, shall be furnished, from time to time, by the State highway departments, on forms supplied by the Office of Public Roads.

Sec. 3. Data furnished by or on behalf of a State shall be supplemented by such reports of the Office of Public Roads as the Secretary may from time to time require before he decides whether the State has complied with the terms of the act or has presented a project statement which should be approved.

Regulation 4.—Project Statements.

Section 1. A project statement shall contain all information necessary to enable the Secretary to ascertain (a)

whether the project conforms to the requirements of the act; (b) whether adequate funds, or their equivalent, are or will be available by or on behalf of the state for construction; (c) what purpose the project will serve and how it correlates with the other highway work of the State; (d) the administrative control of, and responsibility for, the project; (e) the practicability and economy of the project from an engineering and construction standpoint; (f) the adequacy of the plans and provisions for proper maintenance of roads; and (g) the approximate amount of Federal aid desired. With each statement there shall be submitted for the approval of the Secretary copies of the form of contract, together with all documents referred to therein or made part thereof, and of the contractor's bond which it is proposed to use on the project. No alteration of such forms shall be made until it is approved by the Secretary.

Sec. 2. Suitable forms for project statements will be supplied by the Office of Public Roads.

Sec. 3. Project statements for any fiscal year may be submitted at any time after the apportionment for that year shall have been made.

Sec. 4. Projects will be deemed preferred and recommended for approval by the State highway department in the order in which the project statements are submitted, unless it be otherwise specified in writing, but the Secretary may, in his discretion, consider the projects in a different order.

Sec. 5. Each project statement shall be accompanied by a sketch map showing the location of the proposed project and all main contiguous transportation features.

Sec. 6. Suitable samples of materials suggested for use in the construction of a project shall be submitted to the Office of Public Roads, whenever requested by it, for examination prior to the Secretary's decision on the project statement.

Sec. 7. Where any part of the cost of a project is to be furnished by a county or other local subdivision or subdivisions of a State, the project statement shall be accompanied by certified copy of each resolution or order, if any, of the appropriate local officials respecting the funds which are or will be made available, or respecting the supervision of the construction of the road and of the expenditure of the money provided or to be provided for paying such cost.

Regulation 5.—Surveys, Plans, Specifications, and Estimates.

Section 1. Surveys and plans shall show, in convenient form and sufficient detail, according to accepted engineering practice, necessary data in connection with the specifications and estimates, to enable the Secretary to ascertain and pass upon location, grades, drainage, bridges, other structures, special and unusual features, the work to be performed, and the probable cost thereof.

Sec. 2. Specifications shall set forth the proposed method of construction, type of construction, materials to be used, and other essentials, in such detail as to afford complete knowledge of all steps to be taken in the construction of the project.

Sec. 3. The estimate for each project shall show the estimated quantity and cost of each item of construction in detail and, separately, the 10 per cent fund, and shall not include any expense of advertising.

Sec. 4. Rights of way necessary for any project shall be provided, and any incidental damages to adjoining property due to construction work paid by or on behalf of the State, and the expense thereof shall not be included in the estimate or paid in any part, directly or indirectly, by the Federal Government.

Sec. 5. Grade crossings shall be avoided where practicable. The estimated cost of eliminating a grade crossing shall not include any amount the State, county, or other

civil subdivision has received, is to receive, or is entitled to receive, directly or indirectly, as reimbursement or payment from the owner of a public utility for or on account of such elimination.

Sec. 6. No part of the expense of making surveys, plans, specifications, or estimates, by or on behalf of the State prior to the beginning of construction work, shall be included in the estimate or paid by the Federal Government.

Sec. 7. When plans, specifications, and estimates have been approved by the Secretary, no alteration thereof shall be made without his approval.

Sec. 8. For all projects for which statements are submitted after December 31, 1916, standards governing the form and arrangement of plans, specifications, and estimates will be hereafter prescribed and promulgated by the Secretary.

Regulation 6.—Project Agreements.

Section 1. A project agreement between the State highway department and the Secretary shall be executed, in triplicate, on a form furnished by him, previous to commencement of the construction of the project.

Regulation 7.—Contracts.

Section 1. No part of the Federal money set aside on account of any project shall be paid until it has been shown to the satisfaction of the Secretary that adequate means, either by advertising or by other devices appropriate for the purpose, were employed, prior to the beginning of construction, to insure the economical and practical expenditure of such money.

Sec. 2. Immediately on publication of advertisements, copies thereof shall be furnished to the Office of Public Roads.

Sec. 3. Bids shall be in such form that the unit prices at which the various services are to be performed and the various materials furnished will be clearly shown.

Sec. 4. Copy of the tabulated bid prices, showing the unit prices and the totals of each bid for every project, shall be furnished promptly to the Office of Public Roads

Sec. 5. In advance of the acceptance of any bid, sufficient notice of the time and place the contract is to be awarded shall be given to the Office of Public Roads to enable it, if it so desire, to have a representative present. When a bid has been accepted prompt notice thereof shall be given to the Office of Public Roads.

Sec. 6. If the contract be awarded to any other than the lowest responsible bidder, the Federal Government shall not pay more than its pro rata share of the lowest responsible bid, unless it be satisfactorily shown that it was advantageous to the work to accept the higher bid.

Sec. 7. A copy of each contract as executed shall be immediately certified by the State highway department and furnished to the Office of Public Roads.

Sec. 8. The specifications and plans shall be made a part of the contract.

Sec. 9. No alteration in such contract shall be made without the approval of the Secretary.

Regulation 8.—Construction Work and Labor.

Section 1. Suitable samples of materials to be used in construction work shall be submitted, by or on behalf of the State highway department, to the Office of Public Roads whenever requested.

Sec. 2. Unless otherwise stipulated in writing by the Secretary or his authorized representative, materials for the construction of any project shall, prior to use, be tested for conformity with specifications, according to methods prescribed or approved by the Office of Public Roads.

Sec. 3. Unless otherwise specifically stipulated in the project agreement, bridges, viaducts, and underpasses shall have clear width of roadway of not less than 16 feet and clear head room of not less than 14 feet for a width of 8 feet at the center.

Sec. 4. No part of the money apportioned under the act shall be used, directly or indirectly, to pay, or to reimburse a State, county, or local subdivision for the payment of any premium or royalty on any patented or proprietary material, specification, process, or type of construction, unless purchased or obtained on open actual competitive bidding at the same or a less cost than unpatented articles or methods equally suitable for the same purpose.

Sec. 5. The supervision of each project by the State highway department shall include adequate inspection throughout the course of construction.

Sec. 6. Written notice of commencement and completion of construction work on any project shall be given promptly by the State highway department to the Office of Public Roads.

Sec. 7. Reports of the progress of construction, showing force employed and work done, shall be furnished, from time to time, whenever requested by the Secretary or his authorized representative.

Sec. 8. Labor, teams, materials, and equipment furnished, in lieu of money, by or on behalf of the State highway department on construction work shall be used only on such terms and conditions as are set forth in the project agreement.

Regulation 9.—Records and Cost Keeping.

Section 1. A separate account for each project shall be so kept, by or under the direction of the State highway department as to enable the secretary, or his authorized representative, to ascertain at any time the expenditures on

and the liabilities against the project and, separately, the condition of the 10 per cent fund.

Sec. 2. Such other records of contract and force account work, and of inspections and tests by or on behalf of the State, shall be kept by or under the direction of the State highway department, as will enable the Secretary, or his authorized representative, at any time to determine the condition of the construction and maintenance of, and the cost to the State and the Federal Government of the construction work and labor done on any project.

Sec. 3. The accounts and records, together with all supporting documents, shall be open, at all times, to the inspection of the Secretary, or his authorized representative, and copies thereof shall be furnished when requested.

Sec. 4. Certified copies of pay rolls on force account work and of all vouchers for other expenditures shall be furnished, whenever requested by the Secretary or his authorized representative.

Sec. 5. Whenever requested by the Secretary or his authorized representative, unit costs on any project shall be kept on forms furnished by the Office of Public Roads.

Regulation 10.—Payments.

Section 1. Vouchers, in the form provided by the Secretary and certified as therein prescribed, showing amounts expended on any project and amount claimed to be due from the Federal Government on account thereof, shall be submitted by the State highway department to the Office of Public Roads, either after completion of construction of the project or, if the Secretary has determined to make payments as the construction progresses, at intervals of not less than one month.

Regulation 11.—Office of Public Roads.

Section 1. Papers and documents required by the act or these regulations to be submitted to the Secretary may be delivered to the Office of Public Roads and from the date of such delivery shall be deemed submitted.

**RULES AND REGULATIONS OF THE SECRETARY
OF AGRICULTURE UNDER SECTION 8 OF THE
FEDERAL AID ROAD ACT.**

Issued September 1, 1916.

Regulation 1.—Definitions.

For the purposes of these regulations the following terms shall be construed, respectively, to mean:

Section 1. Act, Section 8 of an act of Congress entitled "An act to provide that the United States shall aid the States in the construction of rural post roads, and for other purposes," approved July 11, 1916. (Public, No. 156, 64th Congress.)

Sec. 2. Secretary. The Secretary of Agriculture of the United States.

Sec. 3. Office of Public Roads. The Office of Public Roads and Rural Engineering of the United States Department of Agriculture.

Sec. 4. Local authority. The State, Territory, or county, jointly or severally, making application for the survey and construction of a road or entering into a cooperative agreement with the Secretary.

Sec. 5. State. Any State or Territory.

Sec. 6. Road. A road, trail, or bridge.

Sec. 7. National forest road. A road constructed or to be constructed in cooperation with the local authorities—under the direct supervision of the Secretary of Agriculture, and paid for, in whole or in part, out of moneys made available by the act.

Sec. 8. Cooperative road. A road constructed or to be constructed under State, Territory, or county supervision and under cooperative agreement as provided in the act, but paid for out of funds other than those appropriated by the act.

Sec. 9. Construction. Reconstruction and improvement of roads, as well as original construction.

Sec. 10. Maintenance or properly maintain. The making of needed repairs and the preservation of a reasonably smooth surface, considering the type of road, but not extraordinary repairs or reconstruction.

Sec. 11. State highway department. Any department of another name, or commission, or official or officials, of a State empowered, under its laws, to exercise the functions ordinarily exercised by a State highway department.

Regulation 2.—Apportionment.

Section 1. Ten per cent of each annual appropriation shall be withheld as a special fund, from which, as directed by the Secretary, the apportionment to any State as hereafter provided may be increased, and from which there shall be paid such amounts as the Secretary may find necessary for the general administration of the provisions of the act. The remaining ninety per cent of each annual appropriation shall be apportioned to the States as follows: One-half on the basis that the aggregate area of the lands of the United States in the national forests in each State bears to the total land area of such State, and one-half in the proportion that the estimated value of timber and forage resources of the national forests in such State bears to the total value of timber and forage resources of the national forests of all the States: *Provided, however,* That in such apportionment the States of Florida, Michigan, Minnesota, Nebraska, North Dakota, and Oklahoma shall be considered as a unit of apportionment, and the States within which lands have been acquired by the United States under the provisions of the act of March 1, 1911 (36 Stat., 961), entitled "An act to enable any State to cooperate with any other State or States or with the United States for the protection of watersheds of navigable streams, and to appoint a commission for the acquisition of lands for the purpose of conserving the navigability of navigable rivers," known as the

Weeks law, shall also be considered as a unit of apportionment.

Sec. 2. The apportionment for the fiscal year ending June 30, 1917, shall be made as of the date of the approval of these regulations, and on or before the 1st day of January next preceding the commencement of each succeeding fiscal year the Secretary will make like apportionment for such fiscal year.

Sec. 3. Any amounts apportioned to the States as herein provided remaining unexpended for a period of three years after such apportionment may be reapportioned by the Secretary to the several States in the manner provided for original apportionment.

Regulation 3.—Applications.

Section 1. Application for the survey, construction, and maintenance of roads under the act shall be made by the proper local authority to the Secretary upon forms furnished by the Forest Service and filed in the district office of the Forest Service for the district within which the proposed road is located. Any application by a county in a State having a State highway department shall, before filing, be referred to such department for its recommendation, which shall be filed with the application.

Sec. 2. Applications for the fiscal year ending June 30, 1917, shall be filed on or before October 1, 1916, and for each succeeding fiscal year on or before the 1st day of January next preceding such fiscal year.

Sec. 3. Each application shall contain: (a) Satisfactory evidence of authority to make application on behalf of the State, Territory, or county, and to enter into a cooperative agreement with the Secretary for the survey, construction, and maintenance of the proposed road; (b) a statement of the public needs to be served by the proposed road and the manner in and extent to which such road is necessary for the use and development of the resources upon

which communities within or adjacent to the national forests are dependent; (c) a statement showing (1) the general location of the proposed road. (2) its termini, length, grades, and estimated cost, and (3) the name, population, and location with respect to the proposed road of each community that would be benefited thereby; and (d) proposals for cooperation, giving in detail the amount and extent of the cooperation offered, whether in money, materials, labor, or the construction of a cooperative road and whether cooperative moneys will be held and disbursed by the local authority or will be deposited in the United States Treasury in accordance with the provisions of the act of Congress approved June 30, 1914 (38 Stat., 415, 430), entitled "An act making appropriations for the Department of Agriculture for the fiscal year ending June 30, 1915," creating a special fund of contributions for cooperative forest work, available until expended, for the payment of the expenses of such work and for refunds to the contributors of amounts paid by them in excess of their share of such work.

Sec. 4. Applications which are not approved for the fiscal year for which made will be retained, and unless modified or withdrawn by the applicant will be considered for succeeding fiscal years.

Regulation 4.—Selection of Projects.

Section 1. The Forest Service shall prepare: (a) A project plan for each State, providing, as far as practicable, for a comprehensive road system in the national forests, showing in the order of their importance the roads within or partly within the national forests which it believes should be constructed; (b) maps showing the road system for each national forest and delimiting the projects listed, as provided in section 3 hereof, with a mark or marks of identification for each; and (c) a statement for each county in which there is a national forest, showing the maximum amount which may be expended therein under the act. Such project plans, maps, and statements shall be submitted to the Secretary for approval, and after such approval shall

be transmitted to the Office of Public Roads for its information.

Sec. 2. Unless satisfactory data are already available, reconnoissance surveys and preliminary cost estimates shall be made by or under the direction of the Office of Public Roads of all road projects for which proper application has been made.

Sec. 3. A list of the projects applied for, arranged as to each State in the order in which construction is recommended, shall be forwarded each year for presentation to the Secretary. The project list as approved by the Secretary shall determine the order of construction for each year.

Regulation 5.—Cooperative Agreement.

Section 1. Upon the approval of any project list, a cooperative agreement for execution by the Secretary and the local authority shall be prepared by the solicitor from data furnished by the Forest Service and the Office of Public Roads for each of those projects, in the order listed, for which funds are or will be available, and shall provide for: (a) Surveys, plans, construction, and maintenance of the project to be done in accordance with these rules and regulations; (b) amount, value, and character of cooperation; (c) furnishing of labor and materials, the deposit of cooperative funds in the Treasury, or the disbursement of such funds by the local authority; (d) supervision and inspection during construction and approval upon completion; (e) final accounting to each party to the agreement of all labor or materials furnished and all moneys expended under the agreement; and (f) such other terms as in the opinion of the Secretary should be included.

Sec. 2. The basis of cooperation shall be the reconnoissance survey estimate of the cost of final survey and construction. Cooperation shall be expressed as far as feasible in percentages. If the location survey estimates exceed the reconnoissance estimates by 25 per cent or more

the Secretary shall so notify the local authority, and at any time within 30 days either party to the agreement may apply for a modification thereof. If modifications can be agreed upon, a supplementary agreement, if necessary, shall be drawn; otherwise, either party may withdraw from the agreement upon 30 days' notice. In case of such excess, construction shall not be started nor advertisements made for bids until final agreement is reached.

Sec. 3. Each local authority will be required to cooperate as herein defined in an amount at least equal to 50 per cent of the estimated cost of the final survey and construction and the entire cost of maintenance of national forest roads, unless a satisfactory showing is made to the Secretary that such an amount of cooperation is inequitable. Cooperation by local authorities may be in the form of money, labor, materials, or the construction of cooperative roads, and the amount and value thereof shall be fixed by the Secretary. Cooperation in the form of road construction will be accepted only when such cooperative road connects with and is an extension of a national forest road, and to the extent only that such road is necessary to furnish a connection between a national forest road and the general State, Territory, or county road system. Such cooperative road may be either within or without national forest boundaries.

Regulation 6.—Surveys, Construction, and Maintenance.

Section 1. Upon the execution of a cooperative agreement the Office of Public Roads shall proceed with the survey and construction of the road in accordance with such cooperative agreement.

Sec. 2. National forest roads shall be constructed under the supervision of the Office of Public Roads, in accordance with plans prepared by it and approved by the Forest Service. The maintenance of such roads shall be under the supervision of the Office of Public Roads, unless otherwise provided in the agreement.

Sec. 3. Cooperative roads shall be constructed in accordance with plans made as provided in the cooperative agreement and approved by the Office of Public Roads and the Forest Service. Such roads shall be subject to approval by the Secretary on completion, and to inspection by the Office of Public Roads during construction and maintenance. Cooperative roads shall be maintained by the local authorities.

Sec. 4. If a cooperative road is not constructed as provided in the preceding section, or any road constructed under a cooperative agreement is not properly maintained in accordance with its terms, or there is failure to comply with any other of its terms, the Secretary will give notice of such fact to the proper local authority. If within four months from the receipt of such notice the terms of such agreement are not complied with the Secretary will thereafter refuse to enter into any other cooperative agreement with such local authority until compliance has been made with the original agreement.

Regulation 7.—Accounting.

Section 1. All Federal funds expended for road construction under the act and all cooperative funds which may be deposited in the United States Treasury in accordance with the act of Congress approved June 30, 1914 (38 Stat., 415, 430), mentioned in section 3 of regulation 3, shall be disbursed as directed by the Secretary of Agriculture.

Sec. 2. Cooperative funds used for the survey and construction of national forest roads but not deposited in the Treasury shall be disbursed by the local authority only upon vouchers approved by the Office of Public Roads.

Sec. 3. A separate account shall be kept, as directed by the Secretary, of all moneys disbursed for national forest roads showing the States and counties within which and the projects upon which such moneys have been expended, and the Secretary will furnish to the local authorities a detailed

statement of such expenditures as soon as practicable after the completion of every project.

Sec. 4. Unless otherwise directed by the Secretary, records of the costs of survey and construction of all road projects, whether cooperative or national forest roads, shall be kept upon forms to be supplied by the Office of Public Roads. If the Secretary shall so direct, progress statements or reports shall be submitted from time to time to the Office of Public Roads on forms supplied by that office, and within 90 days after the completion of a project the local authority shall submit to the Secretary a final report of the project on a form supplied by the Office of Public Roads.

Sec. 5. Immediately upon the execution of a cooperative agreement the Secretary will notify the Secretary of the Treasury of the amount to be expended by the United States within or adjacent to any national forest thereunder, and upon the completion of each project and the closing of the project accounts relating thereto the Secretary will submit to the Secretary of the Treasury a statement of the total expenditures of Federal funds made on account thereof and the distribution of such expenditures to each national forest concerned.

**ARTICLE ON THE GOVERNMENT AND GOOD
ROADS.**

**By Hon. David F. Houston, Secretary of
Agriculture.**

(American Review of Reviews, September, 1916.)

During the coming year there will be throughout the country increasing interest in the application of the new Federal law providing grants of money for country roads in the 48 States. So many bills have been introduced and discussed at Washington that the average reader is not quite clear as to the provisions of the measure that has now been placed on the statute books by Congress and the President. Appreciating the great interest that the present Secretary of Agriculture has shown in the progress of the movement for good country roads as bearing vitally upon all the problems of rural life we have requested him to make an authoritative statement as to the way in which the law would work in its relation to the respective States. In the midst of many public duties of exceptional importance, the Secretary has acceded to our request and prepared the following admirable statement dealing with the highway situation as affected by this new Federal law. The Editor.

For many years there has been a definite and growing interest in good roads. In early times road improvement, such as was undertaken, was directed almost exclusively by local agencies.

To thoughtful men it was apparent that if satisfactory results were to be secured central control, at least by the States, should be established. Washington, writing to Patrick Henry, referred to the slight progress that was being made under the direction of the local jurisdictions and suggested the necessity of developing a central State body which should have as its function the promotion of a movement for better roads and for more effective administrative supervision of construction and maintenance.

Comparatively little headway was made for many years, and not until about the beginning of this century did State action begin to assume definite proportions or to develop the requisite control. About 12 years ago the total annual expenditure of the States for road building amounted to only \$2,000,000, but by 1912 the amount had increased to \$43,000,000, and it is estimated that at present the Nation is expending the equivalent of at least \$225,000,000 for road improvement. Along with the increased provision for road building there has come a great improvement in machinery for planning roads and for expending the funds. There has been a definite movement for the creation of State highway commissions. Three or four years ago only 29 of the States had any adequate highway machinery, while today 39 have fairly satisfactory commissions. The result has been better planning, great improvement in administrative methods, and a fuller return to the people for the money provided by them.

The National Government's Interest.

The interest in road development was manifested a number of years ago by the Federal Government in the provision for a Federal office of roads in the Department of Agriculture. For a time this office had inadequate support. Its activities were limited largely to testing and research work, to the issuance of publications of an educational character, and to the giving of expert advice. More recently it has extended its activities in a number of directions, and especially in making demonstrations of the best methods of road building in different sections of the country.

The progress made by this office is revealed in the fact that the appropriations for the support of its ordinary activities have increased from \$279,400 for the fiscal year 1914 to \$599,200 for the fiscal year 1917. In 1912 the Congress placed an additional burden upon it. It made an appropriation of half a million dollars to be expended by the Secretary of Agriculture in cooperation with the Postmaster General in improving the condition of roads to be selected

by them on which rural delivery was established or might be established, and provided that such improvements should be made under the supervision of the Secretary of Agriculture. This appropriation was made contingent on the contribution by the State or its civil subdivisions of double the amount provided by the Federal Government. There was thus placed under the immediate supervision of the office of public roads the expenditure of a million and a half dollars in addition to its regular appropriation. The handling of the special fund furnished data of much value, and the results have been responsible in no inconsiderable measure for the larger provision recently made in the passage of the Federal-aid road act, approved July 11, 1916.

Enormous Cost of Bad Roads.

There is no need of discussing the importance of good roads. They are essential to comfortable travel, to the economic production and distribution of farm products, to the development especially of satisfactory rural schools, and to the improvement of the social life of the Nation. Bad roads are very expensive possessions. It is estimated that it costs 23 cents under existing conditions to haul a ton a mile on the average country road and only 13 cents on a properly improved road, but this is not all the story.

The direct cost is very great and the indirect costs are possibly even greater. With bad roads the farmer is compelled to haul when he should be engaged in other activities, while with good roads he can plan his operations without reference to the weather. The States and the local units, as has been intimated, has strikingly recognized these truths by greatly increasing their appropriations and by devising better machinery.

Federal Cooperation.

The question whether or not the Federal Government should participate in any large way directly in the construction of roads has long been before the American people.

Hundreds of bills of almost every conceivable character have been introduced in Congress and debated. The Central Government has a very special and peculiar interest in good roads. It has under its control the transportation of mails, and, with the growth of the rural delivery, the difficulties confronting it in securing economic handling of mails have greatly increased and have been fully recognized.

The impression became general that the Federal Government should participate in the construction of roads, limiting its attention to those over which Federal mails are or may be carried. The constitutional warrant for such action rests on the authority of Congress to establish post offices and post roads. Furthermore, it was conceived to be reasonable that the people of the Nation should have the benefit of the knowledge of both their State and Federal experts, and that the machinery of the two jurisdictions should be placed in a cooperative relation to render effective service to the people. The discussion turned largely on the specific proposals for legislation and on the matter of guaranteeing that money contributed for road building should be wisely expended, and that a dollar's worth of work should be secured from each dollar appropriated.

In 1913, as Secretary of Agriculture, I reviewed the good-roads movement and indicated some of the provisions which, in my judgment, should be incorporated if legislation was to be enacted. In 1914 I returned to this subject in my annual report and said:

The problem, so far as the Federal Government is concerned, is how to inject its assistance into the situation primarily so as to secure efficient expenditure. The people of the Nation are intensely interested in this problem, and pressure will continue for action by the Federal Government. The matter is of sufficient importance to justify again an attempt to indicate the wise course of action in case the Federal Government is further to expand its activities and lend direct support. If direct Federal aid is to be expended, it should be done only under such conditions as

will guarantee a dollar's results for every dollar of expenditure. * * * Legislation should provide for cooperation between the Federal Government and the States, and the State, through an expert highway commission, should be the lowest unit with which the Federal machinery should deal. If the Federal Government recognizes any other unit than the State highway commission, it will complicate the situation in those States where satisfactory developments have taken place, and it will retard movements in the right direction in other communities. If, on the other hand, the law recognizes only a central highway commission, it will strengthen the hands of those that now exist and secure the creation of such bodies in the 26 States that do not now have them. The mere creation of such bodies in every State would be a marked gain. The Federal department and the highway commission of each State should be empowered jointly to select the roads upon which the work is to be performed and to determine the manner and methods of constructing roads under projects mutually agreed upon previously.

It seems desirable that if Federal money is to be expended it should be limited to construction projects and should not be used for maintenance, and, furthermore, because of the time required for the development of the requisite machinery and because of the difficulty of assumption by either jurisdiction of a large initial burden the Federal appropriation should at first be relatively small.

Expenditure for maintenance would involve the Government in a very unsafe and uncertain course. It would be a continuing appropriation on a vast scale. It would seem only proper that if roads are secured the States and the communities should maintain them. I clearly recognize that it is difficult to draw the line between construction and maintenance on the simpler forms of road; but, after all, the line can be drawn and would be much clearer if proper methods of construction were pursued.

As an automatic check to a drain on the Federal Treasury, in case Federal aid is extended, provision should be made that each State shall make available for construction at least as much as is set aside by the Federal Government, preferably twice as much, and that it shall give a satisfactory guaranty to maintain the roads constructed. On all projects on which Federal money may be expended in cooperation with the States it should be provided that the two authorities shall fully cooperate, and that before Federal money is made available for any projects such projects shall have been mutually agreed upon by the Federal department and the State authorities, with clear understandings as to methods of construction, specifications, materials, and the development of a road system.

It will be objected by some that this suggestion involves an invasion of State rights. As a matter of fact, it simply looks to the use of Federal money for the purpose for which it may be voted, and to its efficient expenditure. Those who fear invasion of State rights can easily obviate the danger by declining to ask for Federal money. If they demand Federal money they can not easily decline to have its proper and efficient expenditure safeguarded. It is no argument to assert that State agencies may be trusted. As a matter of fact, they are not the officials who have to assume the responsibility for the expenditure of Federal money. We do trust State authorities fully to vote and expend State funds. They assert the right to look after the expenditure of State funds, and do so with great jealousy. They should show a willingness to have the Federal officers assist in the supervision of the expenditure of Federal moneys.

One thought should be clearly held in mind, namely, that it is highly unwise to discourage State and local effort. Only in recent years have the States begun seriously to attack many of the problems which it was originally contemplated they should solve. If the Federal Government were to make a very large appropriation, it is not improbable that the States would begin to look to it somewhat exclu-

sively for funds with which to build roads. Such a development would be calamitous.

Features of the New Law.

After considering many proposals and after long debate the Federal aid road act was passed by the Congress and approved by the President. It has practically the unanimous indorsement of the highway commissioners of the several States. It is based on sound principles. Its leading features are as follows:

1. It authorizes the Secretary of Agriculture to cooperate with the States through their respective State highway departments in the construction of rural post roads. This principle is important and significant. Heretofore the agencies of the State and the Federal Governments have too often usually proceeded entirely independently and not infrequently worked at cross purposes and sometimes in an antagonistic spirit. The principle of cooperation between the two Governments is extending and promises much for the people whom they serve.

2. No money appropriated by the act can be expended in any State until the legislature of the State shall have assented to the provisions of the act. It is provided that until the final adjournment of the first regular session of the legislature the assent of the governor may be sufficient, but since practically in every case appropriations will be needed and in some cases a State highway department will have to be created, the assent of the governor will not make possible actual operations.

The assent of the State will imply its acceptance of all the terms of the act and such action as may be necessary to enable it to cooperate effectively with the Federal department.

3. Federal money may be expended only for the construction of post roads. The term "construction" is interpreted to include reconstruction and improvement, the

latter excluding merely the making of needed repairs and the preservation of a reasonably smooth surface. To maintain the roads constructed under the provisions of the act is made the duty of the States or of their civil subdivisions according to the laws of the several States, and it is provided that, if the Secretary of Agriculture shall find any road in any State so constructed is not being properly maintained within a given period, he shall give notice of this fact to the highway department and, if within four months from the receipt of the notice the road has not been put in the proper condition of maintenance, no further aid can be extended to such State or civil subdivision.

Perhaps the weakest point in good roads legislation and practice has been the lack of adequate provision for maintenance. It will be essential under the terms of this act that, in considering proposed road projects, careful regard shall be given to the provisions to be made by the States or their civil subdivisions for the maintenance of roads in the discharge of this duty. The construction work in each State must be done in accordance with the laws of the State and under the direct supervision of the State highway department, but the Secretary of Agriculture is given power to inspect the work as it proceeds, to approve it, and to make the necessary rules and regulations for the enforcement of the act. It is stipulated that the projects shall be substantial in character and that expenditures of Federal funds shall be substantial in character and that expenditures of Federal funds shall be applied only to such projects.

4. There are appropriated out of the Federal Treasury for carrying out the general purposes of the act the following sums of money: For 1917, \$5,000,000; 1918, \$10,000,000; 1919, \$15,000,000; 1920, \$20,000,000; 1921, \$25,000,000. Unexpended balances for any State for any fiscal year shall be available until the close of the succeeding fiscal year and amounts apportioned for any fiscal year to any State which has not a State highway department shall be available for expenditure until the close of the third fiscal year succeeding

that for which the apportionment was made. The latter part of this provision was inserted to permit States not having highway machinery to develop it.

A few States in the Union have constitutional provisions prohibiting the State from engaging in any work of internal improvement. The State, of course, may remove this disability. If it does not do so, then, if any number of counties in such State shall appropriate the proportion needed in order to entitle such State to its part of the appropriation apportioned to it under this act and all the other provisions of the act are complied with, the work may proceed. The wording of the act makes it clear that whether action is by the States or by counties, it must be adequate to meet the Federal apportionment to the State.

In accepting the terms of the act the State, as a matter of course, pledges its faith to the five-year program. This is important because it makes possible the arrangement of a comprehensive scheme of road building. Obviously the expenditure of the entire amount of money contemplated under the act should be planned at the outset as far as possible and road systems and projects conceived accordingly. This does not bind the State Legislature to make an appropriation at the first session for the five-year period. This would be prevented by the constitution of many States; but it does involve a pledge of the State's faith to continue the appropriations according to the terms of the act; and even where the counties contribute the necessary funds the assent of the State must be had and the other terms of the act, such as the existence of a highway commission and the acceptance of the duty of maintaining roads, must be complied with.

5. The contribution of the Federal Government for the construction of any road is limited to 50 per cent of the estimated cost of it and can not exceed 50 per cent of the actual cost. The aggregate expenditure out of Federal funds for the construction over the country generally is \$75,000,000. At least as much more must be ex-

pending by the States for construction alone. The Act, therefore, contemplates an aggregate expenditure for general road-construction work over the country of \$150,000,000.

Apportionment of Funds.

6. The Secretary of Agriculture, after making a deduction not exceeding 3 per cent of the appropriation for any fiscal year for administrative purposes, is authorized to apportion the remainder for each year among the several States on the basis of three factors—population, area, and mileage of rural delivery and star routes—each factor having a weight of one-third. The apportionment, as worked out for the fiscal year 1917, is as follows:

Alabama.....	\$104,148.90
Arizona.....	68,513.52
Arkansas.....	82,689.10
California.....	151,063.92
Colorado.....	83,690.14
Connecticut.....	31,090.44
Delaware.....	8,184.37
Florida.....	55,976.27
Georgia.....	134,329.48
Idaho.....	60,463.50
Illinois.....	220,926.23
Indiana.....	135,747.62
Iowa.....	146,175.60
Kansas.....	143,207.40
Kentucky.....	97,471.91
Louisiana.....	67,474.66
Maine.....	48,451.50
Maryland.....	44,047.22
Massachusetts.....	73,850.95
Michigan.....	145,783.72
Minnesota.....	142,394.06
Mississippi.....	88,905.84
Missouri.....	169,720.41
Montana.....	98,287.19
Nebraska.....	106,770.81

Nevada.....	\$ 64,398.30
New Hampshire.....	20,996.62
New Jersey.....	59,212.68
New Mexico.....	78,737.81
New York.....	250,720.27
North Carolina.....	114,381.92
North Dakota.....	76,143.06
Ohio.....	186,905.42
Oklahoma.....	115,139.00
Oregon.....	78,687.37
Pennsylvania.....	230,644.17
Rhode Island.....	11,665.17
South Carolina.....	71,807.64
South Dakota.....	80,946.02
Tennessee.....	114,153.48
Texas.....	291,927.81
Utah.....	56,950.15
Vermont.....	22,844.47
Virginia.....	99,660.71
Washington.....	71,884.28
West Virginia.....	53,270.46
Wisconsin.....	128,361.07
Wyoming.....	61,196.82
Total.....	\$4,850,000.00

The basis of apportionment may slightly change, but, roughly speaking, the amount which each State will receive from the Federal Government after the first year may be ascertained by multiplying these sums by 2, 3, 4, or 5, and the aggregate amount for each State received from the Federal Treasury will be approximately as follows, to be met by equal contributions from the States:

Alabama.....	\$1,562,233.50
Arizona.....	1,027,702.80
Arkansas.....	1,240,336.50
California.....	2,265,958.80
Colorado.....	1,255,352.10
Connecticut.....	466,356.60

Delaware	\$ 122,765.55
Florida	839,644.05
Georgia.....	2,014,942.20
Idaho.....	906,952.50
Illinois.....	3,313,893.45
Indiana	2,036,214.30
Iowa	2,192,634.00
Kansas	2,148,111.00
Kentucky.....	1,462,078.65
Louisiana.....	1,012,119.90
Maine	726,772.50
Maryland.....	660,708.30
Massachusetts	1,107,764.25
Michigan.....	2,186,755.80
Minnesota.....	2,135,910.90
Mississippi	1,333,587.60
Missouri	2,545,806.15
Montana	1,474,307.85
Nebraska	1,601,562.15
Nevada	965,974.50
New Hampshire.....	314,949.30
New Jersey.....	888,190.20
New Mexico.....	1,181,067.15
New York.....	3,760,804.05
North Carolina.....	1,715,728.80
North Dakota.....	1,142,145.90
Ohio.....	2,803,581.30
Oklahoma.....	1,727,085.00
Oregon.....	1,180,310.55
Pennsylvania.....	3,459,662.55
Rhode Island.....	174,985.65
South Carolina.....	1,077,114.60
South Dakota.....	1,214,190.30
Tennessee.....	1,712,302.20
Texas.....	4,378,917.15
Utah.....	854,252.25
Vermont.....	342,667.05
Virginia.....	1,494,910.65

Washington.....	\$ 1,078,264.20
West Virginia.....	799,056.90
Wisconsin.....	1,925,416.05
Wyoming.....	917,952.30
Total.....	<u>\$72,750,000.00</u>

States Must Take the Initiative.

7. The State is the lowest unit with which the Federal Government may cooperate and only through a State highway department. This is made especially clear by the requirement that the Secretary of Agriculture and the State highway department of each State shall agree upon the roads to be constructed therein and the character and method of construction, and that any State desiring to avail itself of the benefits of the act shall by its State highway department submit to the Secretary of Agriculture project statements setting forth proposed road construction. If the Secretary approve such project the highway department shall furnish to him such surveys, plans, specifications, and estimates therefor as he may require.

It will be especially noted that there must be an agreement between the Secretary of Agriculture and the State highway department of each State on the roads to be constructed, that projects, plans, specifications, and estimates shall be submitted by the State highway department and approved by the Secretary of Agriculture before any Federal money can be expended.

The initiative under the act lies with the States, and the Federal Government can not begin operations until after the acceptance of the act by the State, a State highway department has been created, if none exists, and road projects and the requisite engineering data have been submitted to the Secretary of Agriculture and approved. It should be clear, therefore, to communities interested in road projects which might be considered under this act that they should place themselves in touch directly with their central State highway agency.

National Forests and Good Roads.

8. Special provision is made to meet a situation arising especially in the Western States of the Nation because of the presence in those States of the Federal Government as a great landholder. In all the great Rocky Mountain and Pacific Coast States the Federal Government controls millions of acres of forest lands. There are many communities having a sparse population in which the Federal Government is the largest landholder. These communities are struggling to develop themselves and to secure outlets to adjoining communities and to markets. In many cases they have had to rely mainly on taxes on private holdings for means to finance their enterprises.

Heretofore the Federal Government has definitely recognized that the forests should contribute to the local development, as well as the national welfare, especially, by providing for the use of 35 per cent of all gross receipts from the forests for local public purposes; but in some sections there are little or no revenues from the forests, and it was clear that the community should not wait until the period of hardest struggle was past before any assistance was given them. The first need of many of the sections in undeveloped regions is for more and better roads. Without them their struggle to get a foothold is much more difficult. They remain isolated from neighbors and from the outside world with meager educational opportunities and conditions unfavorable to community life and to progress. To meet the situation, the Federal aid road act provides that out of any Federal money not otherwise appropriated the sum of \$1,000,000 a year for 10 years may be expended under the supervision of the Secretary of Agriculture upon request from the proper officers for the construction and maintenance of roads and trails within or only partly within the national forests.

It stipulates that officers of the proper jurisdiction shall enter into a cooperative agreement with the Secretary of Agriculture for the construction and maintenance of such

roads or trails on an equitable basis when necessary for the use and development of resources upon which the community is dependent. It provides further that the aggregate expenditures in any State, Territory, or county shall not exceed 10 per cent of the value of the timber and forage resources within the area in which the roads or trails are to be constructed. It is contemplated that under this provision projects shall be carefully considered both on their relative and absolute merits and that on behalf of the Federal Government, under the direction of the Secretary of Agriculture, the work shall be undertaken by the Forest Service and the Federal Office of Public Roads in cooperation.

This Federal aid road act was designed not only to promote road building but also adequately to safeguard through efficient machinery the expenditure of all funds arising under it. There is a good reason for believing that these purposes will be realized. It is highly probable that it will do much more than this. As has been pointed out, the Nation is now annually spending the equivalent of \$225,000,000 for road building. The improvements of administrative agencies and methods which will certainly follow the operation of this act should lead to greatly increased efficiency in the expenditure of these large additional sums. In such case the Nation will realize great benefit not only from the expenditure of the joint funds but also of the separate surplus money of the States and communities.

How soon actual operations can begin in any State will depend upon the action of the State and the adequacy of its arrangements to meet the terms of the act. The Federal Government will be in position to proceed as soon as the rules and regulations are formulated and projects are presented for its determination.

CHAPTER I.

FEDERAL AID.

Early in 1916, Congress appropriated \$85,000,000.00 to aid the states in the improvement of public highways, \$75,000,000.00 of this amount is apportioned among the states according to population, area, number of miles of post roads and star routes. The total apportionment for Arkansas during the five-year period is \$1,240,336.50, which is divided by years as follows: For 1916, \$82,689.10; for 1917, \$165,378.20; for 1918, \$248,067.30; for 1919, \$330,756.40 and for 1920, \$413,445.50.

In order that the State of Arkansas may secure this sum of money, it is necessary that the State assent to the law by an Act of the Legislature, and provide by law for funds which will be a guarantee to the Federal Government that the State will expend on its public roads an equal amount to that apportioned by the Federal Government.

The problem of securing sufficient funds without placing a greater burden on the tax payer is easily solved by providing for the payment of all of the Automobile license tax into the State Treasury to the credit of the Highway Improvement Fund instead of only one-half as is now the case. There is now to the credit of that fund about \$87,000.00 and estimating the percentage of increase in the number of automobiles to be the same during 1917-18 as is shown for 1915-16 we should have approximately 25,000 for 1917 and between 30,000 and 40,000 for 1918, but if we make a low estimate of 55,000 cars for the two years that would give us at \$10.00 each, \$550,000.00; to this add the \$87,000 now in the treasury, making \$637,000.00, which amount would enable the State to meet the Government requirements for 1916-17-18 and to maintain this department. It will be necessary for the Legislature of 1917 to appropriate \$496,134.00 to meet the Government apportionment for 1916-17-18, or lose the entire apportionment for five years.

Under the Federal law, aid is given to the States under the direction of the Secretary of Agriculture through the

State Highway Department, warrants therefor to be drawn by the Secretary of Agriculture on the Secretary of the Treasury payable to "such official, or officials, or depository, as may be designated by the State Highway Department and authorized under the laws of the State to receive public funds for the State or County."

We have had several conferences with the Federal authorities relative to the handling of the Federal Funds and have been informed by them that the State Treasury could not be made a depository for the funds, because the State Treasurer could not, under our State Constitution, pay out money from any fund unless the same had been appropriated by the Legislature and that it is not within the province of the Legislature of the States to appropriate money already appropriated by the Federal Government. They also suggest that inasmuch as all the dealings with the State will be through the State Highway Commission, confusion would be avoided by authorizing the Chairman of the State Highway Commission to act as a depository for these funds.

We recommend that a system of State Highways be provided for by the Legislature on which these funds may be expended. This can be accomplished by the passage of a law designating as state roads, those leading from a county seat in one county to a county seat in another county and from one county seat to another county seat in the same county (and from county seats along highways leading into other States). If this be done we estimate that the system will embrace 3,500 miles of road, the improvement of which will accommodate about 80% of the State's population. The Federal and State Funds, if used as an aid, will be sufficient to improve the entire mileage. To keep the road building interest as free from politics as possible, we further recommend the creation of an Advisory Board, whose duties it would be to select the roads and apportion both Federal and State aid funds thereon. This Board should be as near non-political as possible, and we would therefore suggest that it be composed of three men, one to be selected

by the Governor, one to be the Professor of Civil Engineering at the University of Arkansas, and the third to be the State Highway Engineer.

The Federal law requires that the State Highway Department furnish all plans, specifications and estimates of cost. It also requires that construction work be "under the direct supervision of the State Highway Department, subject to the inspection and approval of the Secretary of Agriculture." We do not understand the law to mean that an engineer from this department must be in charge of the work and be present every day during construction, but think the law intends for the department to inspect and approve or disapprove the work as it progresses and that the Secretary of Agriculture shall inspect and approve or disapprove, as the case demands.

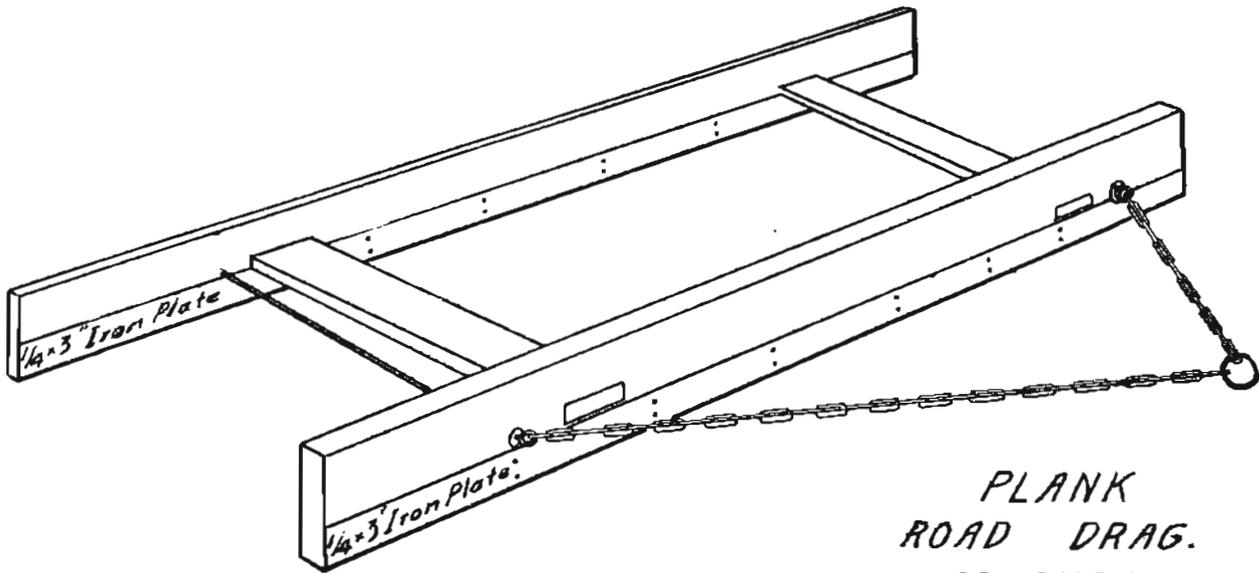
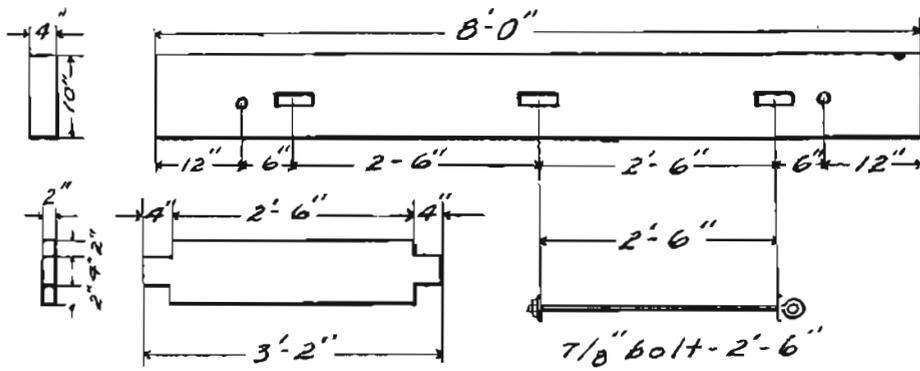
In order that the State be placed on the same footing as the Federal Government, we recommend that the right of inspection and approval be given this department with the power to withhold or withdraw State and Federal aid, if in the judgment of this Department, approved plans and specifications are not being followed.

Maintenances.

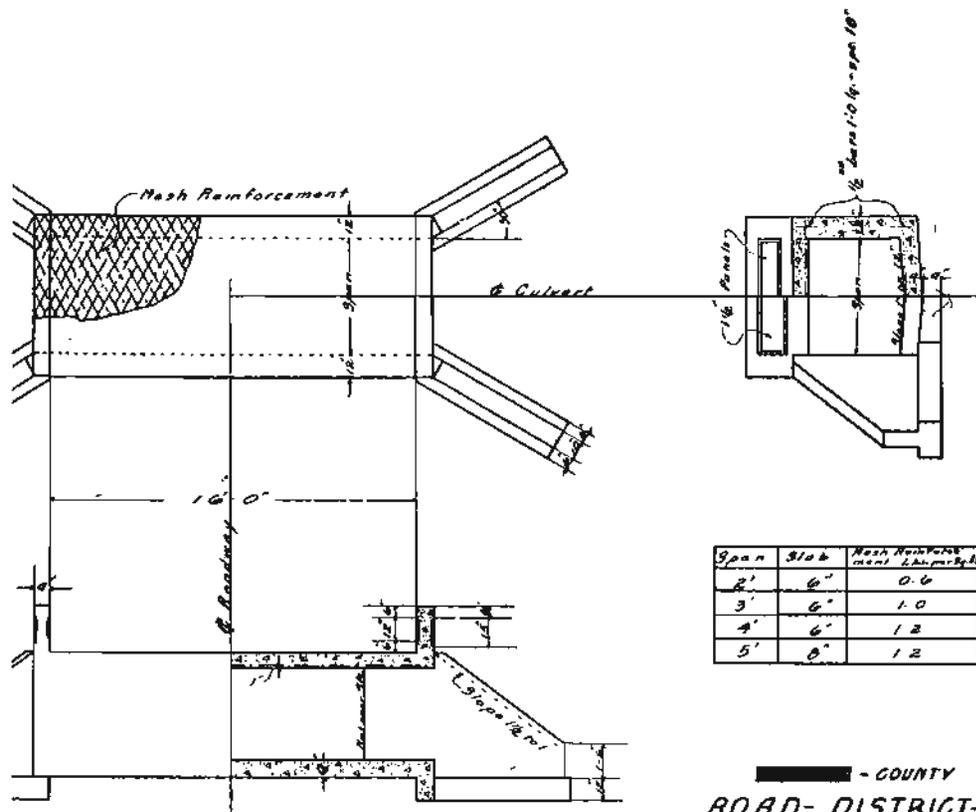
This side of the road question has been greatly overlooked in a few of our counties and road districts. We have tried to impress the County authorities with the fact that intelligent maintenance should begin when the road is completed. For earth road maintenance the use of the split log drag is very important. More attention should also be given to the cutting of weeds and keeping the drains and ditches open.

To comply with the Federal law it is imperative that we provide for maintenance on a practical basis. This could be accomplished by a law authorizing the County Judge to use a part of the 3-mill road tax, or when Road Improvement Districts are organized, the Commissioners to levy a small yearly tax for maintenance.





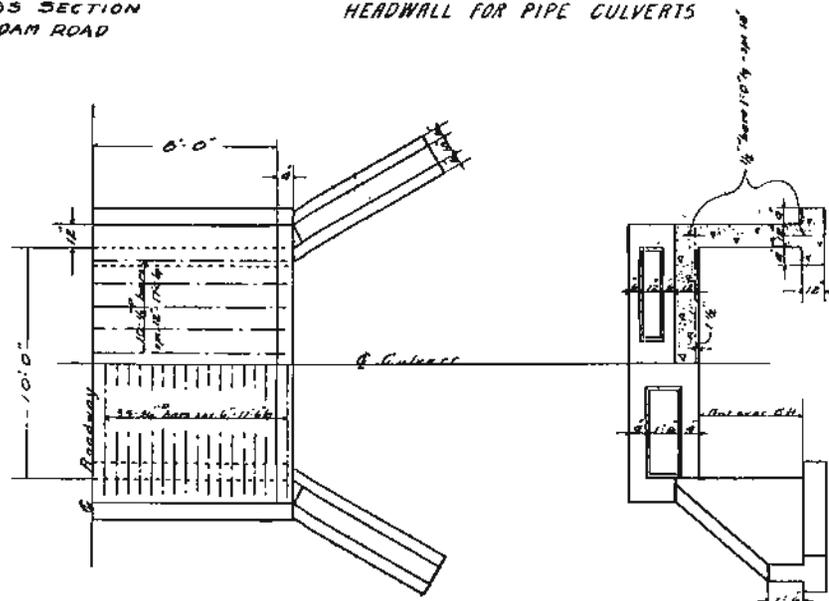
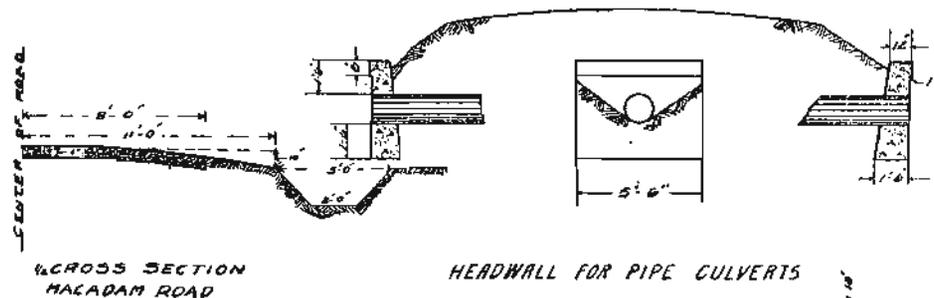
PLANK
ROAD DRAG.
ARKANSAS
STATE HIGHWAY DEPT.



Span	Slab	Mesh Reinforce ment Lbs. per Sq. Ft.
2'	6"	0.6
3'	6"	1.0
4'	6"	1.2
5'	8"	1.2

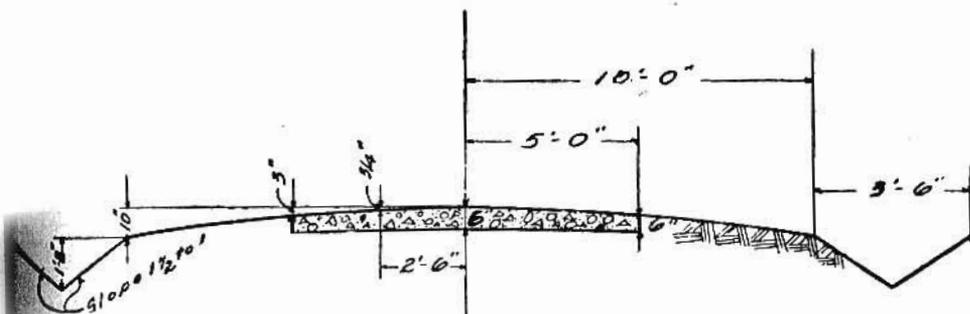
_____ COUNTY
 ROAD- DISTRICT- _____

 CONSTRUCTION DETAILS.
 STATE HIGHWAY DEPT
 LITTLE ROCK _____ 1914.

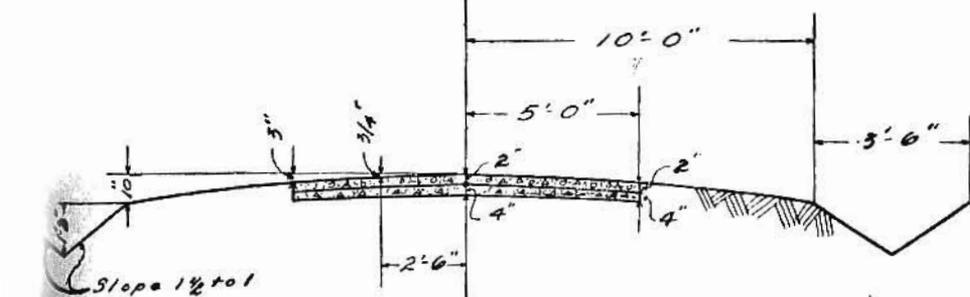


REINFORCED CONCRETE CULVERT-10' SPAN

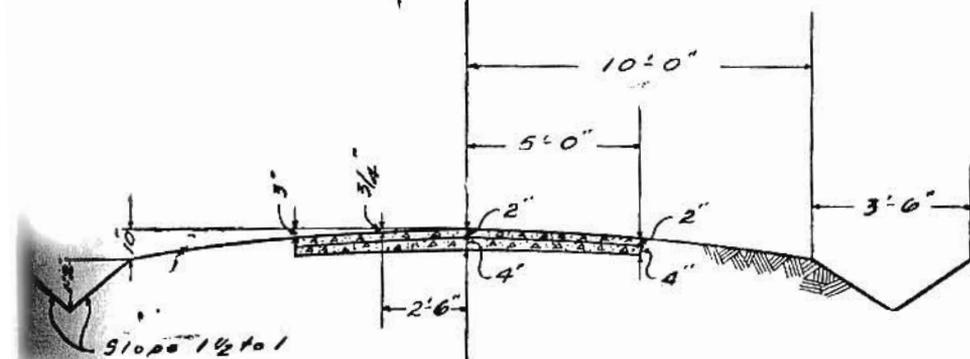
PLAN & DETAILS FOR REINFORCED BOX CULVERT



CROSS-SECTION OF GRAVEL ROAD



MACADAM BASE - GRAVEL TOP.



CROSS-SECTION OF MACADAM ROAD

Convict Labor.

The use of the surplus able-bodied convicts on State and Federal Aid roads can be made profitable to both the State and counties, or Road Improvement Districts, in a great many cases; provided, direct supervision is given this Department, as is required by the Federal Aid Law.

Experience in other States has proved that convicts cannot be profitably used where authority is divided.

The Department should be permitted to use the man under either the guard or honor system as may be best determined.

CHAPTER II.

COUNTY JUDGES REPORT.

Section 16 of Act 302 of the Acts of 1913, require County Judges, engineers, Commissioners and overseers to make reports to the department whenever requested.

Pursuant to this law a copy of a uniform system of blanks was transmitted to all overseers of the State, accompanied by a letter requesting that the blanks be used in reporting the condition of the roads in their respective districts. Response to this call was very meager and the information of very little value. In order to obtain the information we then asked the County Judges for a report on blanks furnished by the department and after three requests to some we finally received reports from all but sixteen. Of those reporting only a few made a complete report, and a good part of the information given seems to have been guessed at and approximated.

The reports concerning the amount received from the 3-mill tax in some cases are approximated, but are believed to be substantially correct. Estimates of the amount of the 3-mill tax have been made by this department for those counties not reporting on this item.

There has been collected and expended from the 3-mill tax during the last fourteen years about \$13,500,00 out of this immense sum, but little of what might be termed permanent roads have been constructed. Some counties have assisted road improvement districts by contribution from this fund, but the most of it was collected in such small amounts and expended in such large territories that it was impossible to do any thing with it in the way of permanent improvement. The people are so anxious for road improvement that they still continue to vote the 3-mill tax and seem to be glad to get even the small benefits they do under the present antiquated system.

The information furnished as to the amount received from free labor is incomplete, for 37 counties failed to give

the information, and the reading of some of the reports indicates that the number of days worked was included in this item. The object of the inquiry was to ascertain the amount of money received in lieu of labor.

Concerning the item "Days warned free labor" it will be observed that fifty-one counties failed to give information. Estimating the fifty-one counties by those reporting on this item would give 355,800 as the number of days warned free labor for the entire state.

The report shows the cost of construction of gravel roads in some cases as low as \$60.00 per mile, and other reports show the cost at from \$60.00 to \$400.00 per mile. The Federal Government estimates the cost of gravel roads properly constructed to be from \$3,000.00 to \$5,000.00 per mile. It is, therefore, quite evident that the roads built would not come up to government specifications, but that these roads are located where gravel is in the soil and were not "graveled" roads.

The reports also show in many instances some very cheap construction of graded earth roads. One County reports several miles graded road at a cost of \$1.00 per mile. The government estimates the cost of grading roads at from \$200.00 to \$1,000.00 per mile. It is therefore evident the roads were merely surfaced and not graded.

It is not in a spirit of criticism that the foregoing references are made but to bring out the fact that our system is wrong. The average County Judge is not a road builder, neither is the overseer as a general thing gifted with the knowledge of road construction, but neither of them can be blamed for it, because road building is a science just as is the practice of medicine or law.

We are convinced after careful study that the only practical way these conditions can be remedied is by placing in charge of our County work competent highway engineers, who would be appointed by the County Judge and approved by this Department. When the income is not

sufficient to justify the employment of an engineer for certain counties, two or more counties could be grouped, thus dividing the expense.

We are also convinced that our free labor system has been a failure and that a cash tax could be used to a greater advantage.

We urge your Honorable Body to provide sufficient funds for District Engineers or road demonstrators, who would take up and show the overseers how to overcome road problems in person or through the public press.

The law requires that we hold road institutes in the various counties of the State, we therefore trust you will provide the funds for this purpose.

If these suggestions are followed we know a great work can be accomplished.

To further our educational work we have built a set of road and bridge models for exhibition over the State. Explanations of construction are furnished.

Constitutional amendment No. 14 submitted at the last general election, even though the caption was misleading, only needed a few more thousand votes to secure its adoption, which shows that if the question of a bond issue properly limited and safeguarded were submitted it would be approved by the people of the State. The people realize that good roads are a necessity, that the present system of filling mudholes will not get good roads, and that if we are to meet future requirements for permanent roads it will be necessary to secure larger sums of money than can be obtained each year from the 3-mill tax, therefore we recommend that a constitutional amendment similar to that submitted last election be again submitted for adoption at the next election.

The officers and employees of the Department traveled more than 50,000 miles during the past two years, in making surveys, aiding in the organization of 126 Road Improvement

Districts, in 66 counties. In addition to this work we have sent speakers into various parts of the State, have advised several of the County Judges on road and bridge matters.

Plans, specifications and estimates of cost have been furnished for 25 steel and concrete bridges outside of Road Improvement Districts.

Testing Material.

This State is so wonderfully blessed with road building material, that it is sometimes a problem to determine which of several available materials should be used. That no mistake be made it is necessary that we have a well-equipped testing laboratory. The law provides that we use the University Laboratory, which has been done where possible. Before this laboratory will be able to render efficient service it must have additional equipment. We would therefore suggest that the report of Prof. Knoch, Professor of Civil Engineering and Consulting Engineer for this Department, be carefully gone over.

Standards.

The Department is preparing as rapidly as possible complete standards for plans, and specifications, which may be had for the asking. We are finishing the first complete road map of the State showing the location of all main roads together with those roads improved and proposed. While this map may not be accurate, having been compiled from data gathered from various sources, it will no doubt be of great benefit.

We have been guided in selecting the types of road by present traffic, its future development, available material, soil conditions, and lastly but not least, by the ability of the tax payer to pay.

The most of our roads are being surfaced with gravel or macadam, although the construction of better types is being urged where condition justify the additional expenditure.

Blue Prints.

By the purchase of the blue print machine, provided for by the last Legislature, we have saved its cost many times over. We have made 26,613 square feet of prints, using 8871 feet of paper. The cost per square foot of printing has been $1\frac{1}{4}$ c per square foot.

**SUMMARY OF INFORMATION CONCERNING
ROADS AND BRIDGES TAKEN FROM COUNTY
JUDGES REPORTS.**

Total Number Miles of Roads in State, 51,904.

Roads Built Prior to 1915.

Total miles of Concrete roads.....	43.00
Total miles of Macadam roads.....	315.94
Total miles of Gravel roads.....	1,547.00
Total Miles of Graded Dirt roads.....	16,331.00

Roads Built During Years 1915-1916.

		Cost.
Total miles of Concrete roads.....	13.00	\$ 83,000.00
Total miles of Macadam roads.....	48.11	227,225.00
Total miles of Gravel roads.....	662.25	334,770.00
Total miles of Sand Clay roads.....	42.05	3,490.00
Total miles of Graded Dirt roads.....	8,827.05	178,885.00

Resources Reported.

Received from 3- Mill Tax.....	\$1,255,401.00	
Received from Free Labor	77,718.85	(37 counties not reporting)
Received from Labor and Tax.....	\$1,333,119.85	
Days warned free labor.....	113,873.00	(at \$1.00 per day. 51 counties not reporting)
Grand total received.....	\$1,446,992.85	

Number of Bridges Built During Years 1915-1916.

No. of Steel Bridges, 113. Length in feet, 7921.....	Cost \$ 175,763.00
No. of Concrete Bridges, 146. Length in feet, 1314.....	16,830.00
No. of Wood Bridges, 362. Length in feet, 21,301.....	65,269.00
Total.....	\$ 257,862.00
Amount spent on roads during 1915-1916.....	\$1,204,757.29 (25 counties not reporting)
Days warned free labor.....	113,873.00
Grand total spent on roads and bridges 1915-1916.....	\$1,318,632.29
Minimum cost of gravel road as reported, \$60.00 per mile	
Minimum cost of graded road as reported, \$1.00 per mile	

CHAPTER III.

ARKANSAS COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
DeWitt Public Square	.25	Macadam	\$ 6,000.00	Special Act.
De Witt, West	5.75	Macadam		
	4.69	Earth	42,648.90	Alexander.
Across Little LaGrue bottom, near Almyra	.25	Macadam	1,000.00	Donation.
Humphrey to Goldman	4.00	Macadam	27,328.05	Alexander.
De Witt to St. Charles	16.58	Macadam	86,568.88	Alexander.

This county is generally level, but unfortunately has no road building material within the borders; not withstanding this handicap construction work has started on a water-bound macadam road under the Alexander Law running from Humphrey to Goldman. Macadam will be 12 feet wide, 6½ inches deep, compacted, and will be placed on a dump 22 feet wide. Length 4 miles; estimated cost \$27,328.-05. Contract was let to J. B. Bunn, Humphrey, Arkansas. Mr. W. G. Stahl, Little Rock, Arkansas, is the engineer in charge of construction; Mr. Earl Holt is Attorney for the District. The road is about 30% completed. It is the most important link between Stuttgart, Pine Bluff and Little Rock. Preliminary surveys, plans, specifications and estimates were prepared by this Department.

Districts are also proposed from De Witt to St. Charles for a macadam road 9 feet wide, 6½ inches deep, compacted; and from DeWitt west; earth and macadam roads, 12 feet wide, 6½ inches deep, compacted. We have furnished surveys, plans, specifications and estimates for both Districts. An engineer was sent to Almyra on ¼ mile demonstration road in Little LaGrue bottoms. Advice was also given to the City of DeWitt in regard to paving the Public Square.

ASHLEY COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Crossett Via Snyder and Hamburg to Fountain Hill	39.11	Gravel	\$129,146.43	Alexander.

road base but practically none suitable for a wearing surface, the most of it being sand-rock. Topography varies from river bottoms to mountain.

CRAIGHEAD COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Jonesboro Via Otwell, O'Bear to Poinsett Co. line.....	2.57 12.29	Asphaltic Concrete Gravel	\$54,035.00	Alexander.

Gravel from Crowley's Ridge is available in most parts of the county for road construction, but it is not the best of material in all cases. Road Improvement District running from Jonesboro-O'Bear was organized last spring in which gravel was specified 12 feet wide and 6 inches deep on a 22 foot dump. Lund and Hill of Little Rock were appointed engineers of construction by the commissioners. John Turney was Attorney. After the organization the Supreme Court held the District invalid because this Department did not make the preliminary surveys, etc. After this decision we made preliminary surveys and prepared plans, specifications and estimates of cost. Petitions are now being circulated for the re-organization. We have also made preliminary surveys and furnished plans, specifications and estimates for a gravel road, 12 feet wide and 6 inches deep, compacted, from Brookland east. This road will open up some of the best land in Craighead County. An engineer was sent to Jonesboro for a demonstration. Roads are fairly good in dry weather. Topography generally level.

CRAWFORD COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Van Buren to Kibler.....	7.55	Concrete	\$56,662.80	Alexander.
Mountainburg to Locke.....	1.90	Earth	1,000.00	Alexander.

Has started the construction of hard surfaced roads by building about five miles of water-bound macadam 14 feet wide, and 6 inches deep, compacted, on a gravel foundation 8 inches deep, compacted. The rock used was very inferior,

The roads surveyed and proposed will connect Hamburg, Crosssett, Snyder and Fountain Hill. The plans call for a gravel road 9 feet wide, 6 inches deep, compacted on a dump 22 feet wide. Because of the absence of material in the county gravel will be shipped from Monticello. The county has a level surface. Engineering service was rendered in making a complete survey for bridges over Bayou Bartholomew at Wilmot and Montrose.

BAXTER COUNTY.

The roads of the county are reported to be in fair condition. Because of the timber, mineral and grazing lands the improvement of its roads will be the greatest of benefit. Several industries have reached the department relative to the building of improved roads. Gravel and limestone are available for surfacing and can be had for a small cost. The topography is rough to rolling.

BENTON COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Part of Eureka Springs to Seligman Road	6.01	Field Stone	\$29,438.60	Alexander
Washington Co. line North Via Siliam Springs, Gentry, Decatur, Gravel Sulphur Springs to Mo. line	17.00	Gravel	\$110,648.30	Alexander

Hard surfaced roads have not been constructed in this county notwithstanding an abundant supply of native material which can be secured at a very low cost. A wonderful progress has been made in placing the earth road in condition. Surveys have been made for a road running north and south through the western part of the county for a gravel road 12 feet wide and 6 inches deep on a 22 foot dump. This road will, no doubt, be a part of a north and south road through western Arkansas, connecting with Missouri on the north and Louisiana on the south. This is a wonderful fruit section and with the development of roads should be a fruit center second to none. Most of Benton county is a high level plateau, the rest rolling.

BOONE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Boone; Jasper to Harrison Road	7.68	Field Stone Gravel top	\$28,081.00	Alexander.

With the development of mining interests the needs of better roads is being daily demonstrated.

Preliminary surveys, plans, specifications and estimates have been completed for a macadam road 12 feet wide, 6 inches deep, compacted, on a dump 22 feet wide, from Harrison to the Newton County line toward Jasper. This road will eventually become a State road of much importance connecting Russellville with Harrison through territory which is not now served by railroad. A good grade of hard limestone is available practically over the entire County. Earth roads are in fair condition. Topography varies from rolling, sloping hills to plateaus and mountains.

BRADLEY COUNTY.

Road conditions in Bradley County have generally improved, but there has been no permanent roads constructed to date. Several steel bridges have been constructed, notably, one over Saline River. Some bank gravel is available in the western part of the County; there is also gravel in Ousatche and Saline Rivers. 90% of the county is level.

CALHOUN COUNTY.

Calhoun County has in the past constructed no permanent roads. There is now a well-defined move for a county system which will serve 90% of the population and will insure the placing into cultivation thousands of acres of land. Roads can be constructed at a minimum cost because of an abundance of gravel. The absence of mountains will hold the grading cost low.

CARROLL COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Eureka Springs to Seligman Road	15.74	Field stone Gravel top	\$61,975.20	Alexander.

Abounds in beautiful scenery, especially in the vicinity of Eureka Springs. Realizing the importance of this City as a summer resort a Road Improvement District has been organized to construct a road from Eureka Springs through the Ozarks toward Saligman, Missouri. Contracts will be let immediately for a macadam road 14 feet wide on a 22 foot dump. Commissioners are Mr. W. M. Blocksom, Chairman, Mr. J. M. Bare, Secretary, and Mr. F. D. Cook. Attorneys, Messrs. F. O. Butt and C. O. Fuller; Engineer in charge of construction, Mr. R. D. Alexander, Oklahoma City, Oklahoma.

Topography generally rough. Road material is abundant.

CHICOT COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Chicot: La. line via Readland, Eudora, Lake Village, Dermott to Desha Co. line	48.98	Gravel	\$259,368.80	Alexander.

Is one of the most progressive in our State. Road conditions are good for the class graded. There is now a Road Improvement District being organized in accordance with the plans, specifications and estimates of this Department, from the Louisiana line north through Eudora, Chicot, Lake Village to Dermott and to the Desha County line. This road will be a link in a State Road from Little Rock, Pine Bluff, McGehee to Louisiana line. The surface will be gravel shipped in; 12 feet wide, 6½ inches deep, compacted, and will be placed on a dump 22 feet wide. The county is level.

CLARK COUNTY.

Road conditions are improving rapidly in Clark County. There have been some permanent roads constructed. A movement has been started to construct a road north and south through the county as a link in the Little Rock, Texarkana road. Good road gravel is abundant. Topography level to broken.

CLAY COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Rector, South, to Greene Co. line.	5.08	Gravel	\$24,556.00	Alexander.

Plans, specifications and estimates have been furnished by the Department and petitions are now being circulated for a Road Improvement District running from Rector south to the Greene County line. Road is to be gravel 12 feet wide, 7 inches deep, compacted on a dump 22 feet wide. Material will come from Crowley Ridge. Road interest is at fever heat. All earth roads are in fair condition. A bridge has been provided for over the St. Francis river and will connect up with the Mississippi Highway System. The Department furnished an Engineer for a series of talks, five in all, beginning at St. Francis and ending at Rector.

CLEBURNE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Van Buren Co. line Via Higden to Stark.	6.29	Earth	\$17,477.38	Alexander.

This County is generally hilly with an abundant supply of rock, some of which, however, is not suitable for road construction. Plans, specifications and estimates have been made for a graded road from Stark to Higden, including a bridge over Little Red River, which will be the connecting link between the north and the south half of the County at all times of the year. Commissioners for the District will be appointed at once. A further development of Cleburne County roads means a large tourist travel because of the beautiful scenery and good water.

CLEVELAND COUNTY.

Although no permanent roads have been constructed, progress is being made in improving road conditions. It is hoped that a hard surfaced road will be constructed from Fordyce through Kingsland, Rison, to connect with the Jefferson County road system, also, a road to connect with Star City. Some road material is available. There are no mountains in the County.

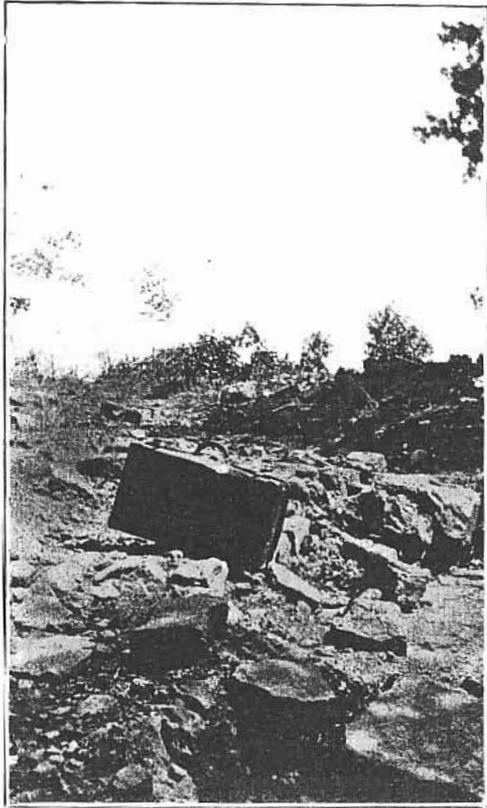
COLUMBIA COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Magnolia to Taylor Road.....	10.30	Gravel	\$30,000.00	Alexander.

The surface of the County is generally level, the northern portion is more rolling. Gravel is found in the western part. In addition to advising the County Judge on various things, surveys have been furnished for 10½ miles of gravel roads in the vicinity of Taylor. The gravel will be 10 feet wide, 6 inches deep, compacted, on a dump 22 feet wide. The County Judge expects to employ an engineer who will direct all work performed on the public roads; this will insure good roads built along practicable lines. Several steel and concrete bridges have been constructed. Because of poor railroad service there is a great demand for an improved road from McNeil to Magnolia. We hope to build this road at once.

CONWAY COUNTY.

Conway County has the most of its important roads graded, but because of the increased traffic it is necessary to construct roads with a hard surface. With this in mind there has been several inquiries relative to a road east and west across the county which would become a part of the Little Rock-Fort Smith road. We have furnished information relative to a proposed bridge over the Arkansas river at Morrillton. There is plenty of rock which can be used for



CRAWFORD COUNTY

Mountainburg to Locke Road, Crawford County,
Before Construction. Suit Case on Center Line of
Road.

being a sand stone. A Road Improvement District has been organized to grade a road from Mountainburg toward Locke. The grades were reduced (by relocation) from 19% to 7%. Work is about 85% completed. Mr. Geo. G. Stockard, Attorney for the District, Mountainburg, Arkansas. Engineering service of Department furnished. We have also furnished preliminary surveys for a concrete road from Van Buren to Kibler. Bridge plans, specifications and estimates were furnished the County Judge for a steel bridge over Lee's Creek to replace one washed out by the floods. Crawford County is making good progress in road matters. Topography varies from bottoms to mountains.

CRITTENDEN COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Crittenden; Waverly, Via Riceville, Hulbert, North toward Junction	13.74	Gravel Bridge	\$120,451.74	Alexander.
Earle to Heafer	29.65	Earth	19,150.00	Alexander.

The opening of the new Memphis Bridge has forced the road issue to the front in Crittenden county. The county has recently let a contract to Ball and Peters, Little Rock, for the approaches of this bridge of earth and trestle to the levee at a cost of, approximately, \$150,000.00, which, when completed, will insure a through State road into Memphis. We have furnished preliminary survey, plans, specifications and estimates for a road district in the vicinity of Hulbert which will construct 29.39 miles of earth road and 14 miles of gravel 14 feet wide and 7 inches deep, compacted, on a dump 22 feet, running from Waverly to Hulbert, etc. Commissioners have been appointed; Mr. T. K. Riddick, of Memphis, Tennessee, is the attorney. Contracts will be let as early as possible. Preliminary surveys, plans, specifications and estimates have been furnished for an earth road 22 feet dump, running from Earle to Heafer. Commissioners have been appointed. Mr. C. R. Heafer is chairman, Heafer, Arkansas; W. C. Ayres, Memphis, Tennessee, is engineer in charge of construction which has already begun. There is no gravel or stone in the county.

CROSS COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Wynne, East, Via Levesque, Parkin to Crittenden Co. line	18 47	Gravel	\$85,413 45	Alexander.

Earth roads in this county are being daily improved, but it is realized that at best earth roads are not year-round roads. We have furnished preliminary surveys, plans, specifications and estimates of cost for a gravel road 12 feet wide and 6 inches deep, compacted on a 22 foot dump running east from Wynne. This road will be no doubt a part of an important cross State road. Gravel can be secured from the Crowley Ridge. Topography is generally level.

DALLAS COUNTY.

About one-third of Dallas county being upland, one-third bottoms and one-third level it will be seen that the road problems vary considerably. Road conditions have improved 100 per cent during the last two or three years. Practically all of the important roads have been graded. In addition to the grading done there has been enough gravel placed to point out the necessity of continuing this work.

DESHA COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
McGehee South to Co. Line toward Dermott	4.10	Macadam	\$25,805 41	Alexander.
Bayou Bartholomew, West, Via McGehee to McArthur	10.55	Gravel	\$62,455 90	Alexander.
Arkansas City to Gaines Landing	8.77	Earth	6,466 60	Alexander.

Preliminary surveys, plans, specifications and estimates have been prepared for a macadam road 12 feet wide and 6 inches deep, compacted, on a 22-foot dump, running from McGehee toward Dermott to the Chicot county line and to McArthur, continuing a through road from the Louisiana line toward Pine Bluff and Little Rock. Rock will be shipped from Little Rock. Petitions are now in circulation for an Improvement District covering this work and are being freely signed. We have also furnished engineering service

on eight miles of earth road in the vicinity of Arkansas City which will open up a large area of newly drained territory.

DREW COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Vicinity of Winchester	4.00	Macadam	\$22,762.27	Alexander.
Wilmar Via Monticello, Tillar, Winchester to Desha Co. Line	42.82	Gravel	150,000.00	Alexander.

Drew county has in use several large steel bridges which have all been constructed in the last few years. The sentiment for improved roads is very strong as is evidenced by the requests we have received for surveys and information. Preliminary surveys, plans, specifications and estimates have been furnished for a gravel road beginning at Wilmar and running through Monticello, Selma, Tillar and Winchester. This road will be constructed of native gravel 14 feet wide and 6 inches deep, compacted, on a 22-foot dump and will connect up with the Louisiana-Little Rock road. Another road is proposed north and south through the county connecting up with the Lincoln county system which will make another connection with Pine Bluff and Little Rock. All earth roads are in fair shape. Topography generally level. Road improvement is of more than usual importance because of the State Agriculture School which is located there.

FAULKNER COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Conway to Vilonia	13.63	Gravel	\$56,000.00	Alexander.
Conway to Salttillo	8.07	Gravel	37,480.50	Alexander.

The roads of this county have been greatly improved within recent years. The building of steel bridges over the large streams, especially the one over Cadron Creek, which was built jointly with Conway county, has been of the greatest benefit to the county as a whole. The Cadron Creek bridge and the improvement of road through Cadron Creek bottoms eliminates one of the worst sections on the Little Rock-Fort Smith road. Preliminary surveys, plans, specifica-

tions and estimates of cost have been filed with the county court for a road from Conway through Vilonia to the White county line. Construction to be native rock, base 12 feet wide and 5 inches deep, with a 3-inch top of gravel for a recovering surface; and for a gravel road running from Conway to Saltillo, 12 feet wide, 6 inches deep, compacted, on a 22-foot dump. Petitions are now being circulated for both districts and are being freely signed. The only rock available is a sand stone which can be used only for base. The county is generally level with a few rolling hills.

FRANKLIN COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Ozark, North, Via Mountain Top to Johnson Co. Line	11.63	Earth	\$16,850.00	Alexander.

By a proper development of her roads, Franklin county will become one of the principal fruit and small berry centers of the State. The roads have been much improved in recent years, but they do not yet meet the needs of the farmer. The future Little Rock-Fort Smith highway will, no doubt, traverse this county. The department, at the request of the county judge, made survey for a graded road from Ozark north which will be constructed along the new location. Abundant rock is available for base of either gravel or macadam roads.

FULTON COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Mammoth Spring Via Salem to Viola	40.00	Gravel	\$160,000.00	Alexander.

Realizing the importance of easy transportation between Salem the county seat, and the railroad, this department was requested to furnish preliminary surveys, plans, specifications and estimates of cost for a road from Mammoth Spring to Salem. The road will be graded with a 22-foot dump, all bridges, culverts, etc., will be of permanent materials. Mammoth Spring is the largest spring in the world and will, no

doubt, become a famous resort when the roads are developed to a higher state of efficiency. Macadam roads can be constructed at a minimum cost because of the large supply of hard lime stone. Topography is rough but scenic. Bridge plans were furnished on a bridge 520 feet long over Spring River at Mammoth Spring.

GARLAND COUNTY.

Garland county has constructed some beautiful drives in the vicinity of Hot Springs, the noted resort. The Little Rock-Hot Springs road has been completed through Garland county. All other important roads leading to and from Hot Springs have been graded and are dragged regularly. A movement is gathering force which contemplates the construction of a hard surfaced road toward Arkadelphia. The main roads within the forest reserve are maintained in excellent condition. The county lies among hills and mountains which contain good road material.

GRANT COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Sheridan, East & West, across County.	28.00	Gravel	\$160,000.00	Special Act.

Grant county took a forward step by securing a special act of the legislature during 1915, authorizing the construction of a road across the county east and west through Sheridan, the county seat. After a thorough investigation the department advised the use of gravel 12 feet wide and 6 inches deep, compacted. On a good portion of this work local gravel was used; on the remainder of the work Saline county gravel was used. A fair grade of gravel is obtainable in the western part of the county. Dr. J. L. Butler is chairman and Mr. Wes Elkins is secretary of the Board of Commissioners. Major Wm. J. Parkes, Pine Bluff, is the engineer in charge of construction and R. R. Posey is attorney. Cole and Ash, contractors. Construction 90 per cent finished. Grant county also constructed its part of the "Dollar-way" road from Pine Bluff to Little Rock. With the completion of a



GRANT COUNTY, No. 1

Unloading Gravel on the Road

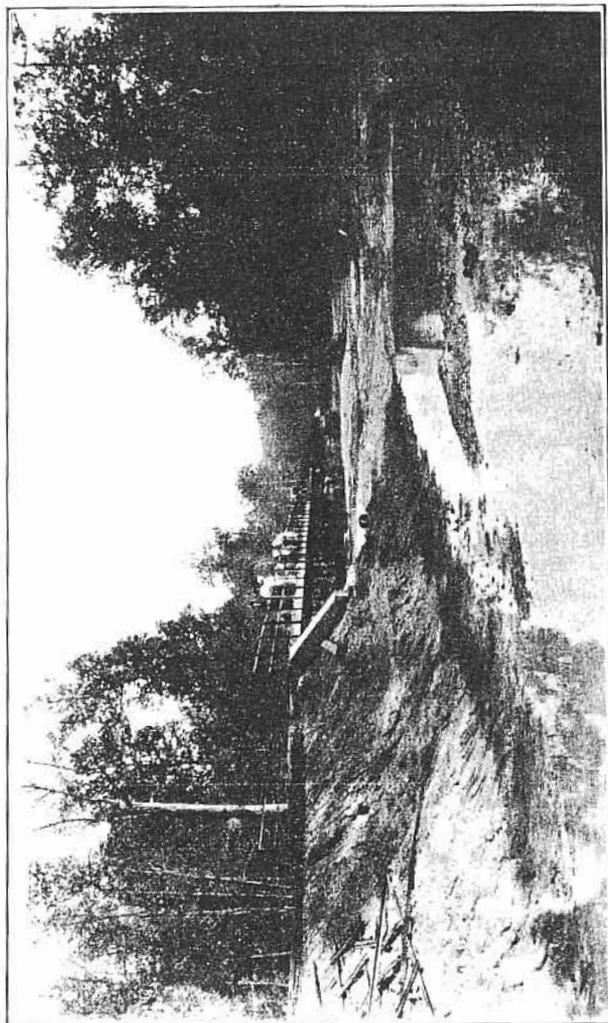
W. J. Parkes, Engineer, Pine Bluff

Arkansas Construction Co., Contractors, Little Rock



GRANT COUNTY, No. 1

Re-location Through Hurricane Creek Bottoms, Average Fill 5 Ft. High, 1 Mile Long. Old Road very Crooked.
W. J. Parkes, Engineer, Pine Bluff
Arkansas Construction Co., Contractors, Little Rock

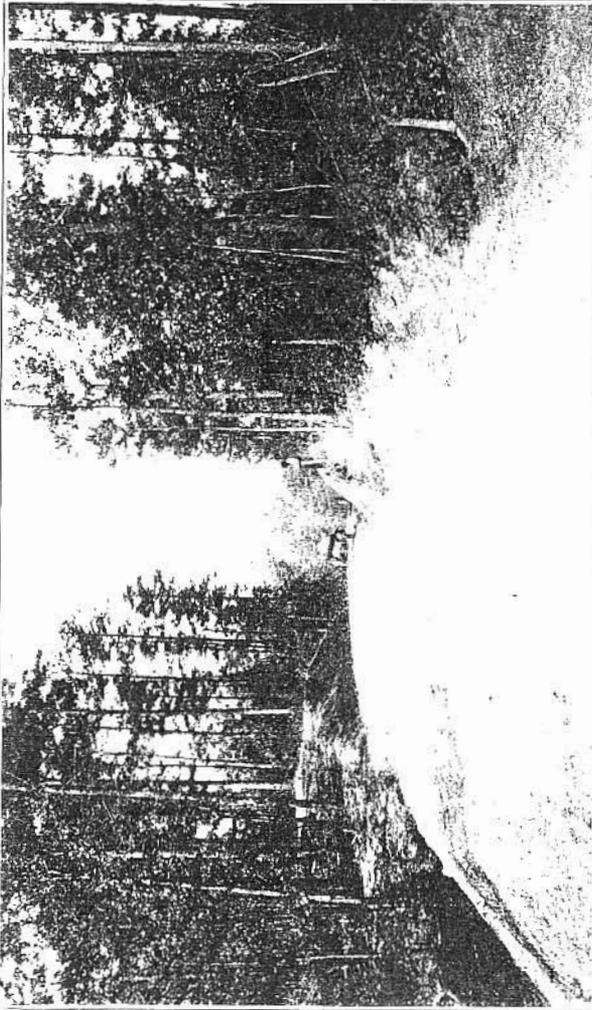


GRANT COUNTY, No. 1

Bridge Across Saline River Bottoms, 1100 Ft. Long, 16 Ft. Wide

W. J. Parkes, Engineer, Pine Bluff

Arkansas Construction Co., Contractors, Little Rock



GRANT COUNTY, No. 1

Avoiding an 8% Grade On Old Road by Going Around Hill.

W. J. Parkes, Engineer, Pine Bluff

Arkansas Construction Co., Contractors, Little Rock

six-mile gap between the Dollarway road in Jefferson county and the Grant county line there will be a continuous road from Pine Bluff to Sheridan and to the Hot Spring county line, which is within 8 miles of Malvern. The conditions of other roads are also being improved. Topography undulating.

GREENE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Paragould, East Via Bard to Hopkins Bridge and South to Craighead Co. Line	30.30	Gravel	\$120,000.00	Alexander.
Craighead Co. Line North Via Fontaine and Walnut Corners	12.00	Gravel	42,000.00	Alexander.
Paragould West Via Walcott to Lawrence Co. Line	29.19	Gravel	100,000.00	Alexander.

Most of the principal roads in the county are graded. Because of the nature of the soil it will be necessary to use a hard surface before the roads will be in good condition the entire year. Realizing this, we were requested to furnish preliminary surveys, plans, specifications and estimates of cost for a road from Walnut Corner to Fontaine and from Paragould east and west. Gravel roads 12 feet wide and 6½ inches deep compacted, were recommended. Gravel is available along Crowley's Ridge. The Fontaine-Walnut Corner road will be a link of the Ozark Trail. Steel bridges have been constructed over practically all of the drainage ditches and over the larger streams. Several miles of gravel roads have been built in the vicinity of Paragould. With the exception of Crowley's Ridge the county is bottom land.

HEMPSTEAD COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Hope to Rocky Mound	8.50	Macadam	\$30,000.00	Alexander.
Hope to Spring Hill	5.00	Macadam	22,000.00	Donation.
Washington to Ozan	6.61	Gravel	30,613.98	Alexander.
Ozan Northwest to Howard Co. Line toward Nashville	10.49	Gravel	48,000.00	Alexander.
Hope to Dyke Springs Road	1.25	Gravel	7,318.63	Alexander.
Hope to Washington	7.95	Gravel	30,920.00	Alexander.
Hope to Fulton	13.37	Gravel	54,907.94	Alexander.
Hope to Emmett	12.00	Gravel	48,000.00	Alexander.

Preliminary surveys, plans, specifications and estimates of cost have been furnished for a road from Hope to Fulton,

and from Hope to Emmett, these roads being Hempstead county's link of the Little Rock-Texarkana Highway. Gravel will be used 14 feet wide and 6½ inches deep, compacted, and will be shipped from Howard and Miller counties. Surveys have also been furnished for a road from Hope to Washington, Ozan and the Howard county line, being a part of the Jefferson Highway through Western Arkansas. Howard county gravel will be used 12 feet wide and 6 inches deep, compacted. Petitions are now in circulation for the organization of these districts on some of which majorities have been secured. This system of roads, in a large measure, will solve Hempstead county's road problems.

Preliminary plans, specifications and estimates of cost have been filed with the court and petitions are in circulation for a road from Hope toward Dyke Springs and from Hope to Rocky Mound. Gravel will be used in both districts 10 feet wide and 6 inches deep. No surfacing material is available in the county; there is some sand stone which in a few cases can be used for base.

The department has had a representative in the county several times for conference with the county judge and overseers.

The improved road idea is in Hempstead county to stay. There has been constructed steel bridges over practically every stream in the county. County generally rolling.

HOT SPRING COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Malvern East to Grant Co. Line	8.00	Gravel	\$30,000.00	Donation.

The construction of concrete culverts over the entire county has begun which will eliminate expensive maintenance of timber culverts. There has also been several steel bridges built.

Surveys have been made by this department for a road eight miles in length connecting Malvern with the Grant county road, thus insuring a through road from Pine Bluff, Sheridan, Malvern and, eventually, Hot Springs and con-

necting with the Little Rock-Texas-arkana Highway. There is gravel of good quality available for road construction. To date about 15 miles have been finished. The county is generally level with a few rolling hills. Plans, specifications, etc., were furnished for a steel bridge over Ouachita River near Malvern which has been erected.

HOWARD COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Pike Co. Line Via Corinth, Nashville to Mineral Springs with laterals; Nashville South and East	27.68	Gravel	\$108,000.00	Alexander.

This county has an abundance of good gravel in the vicinity of Nashville. In a great many instances a well-graded road means a gravel road because of the amount of gravel carried by the soil. The improvement of roads is a live issue in this county. We have furnished preliminary surveys, on a road north and south through the county with laterals, which will become a part of a through road in Western Arkansas. Road conditions have improved wonderfully in recent years. Nine steel bridges have also been constructed.

INDEPENDENCE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Independence; Batesville to Magness	15.20	Macadam	\$69,344.50	Alexander.

While there has been practically no hard surfaced roads constructed a general improvement in the earth roads is noticeable. There is plenty of limestone and gravel available for surfacing. Surveys were furnished for a macadam road 12 feet wide and 6½ inches deep, running from Batesville to Magness. A road has also been opened from Batesville to Cave City in Sharp county. The county is generally rough.

IZARD COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Melbourne to Guion	1 50	Macadam	\$41,000 00	Alexander.
	10 02	Gravel		
Melbourne to Mt. Olive	13 02	Earth	15,000 00	Donation.

Not having sufficient railroad facilities the improvement of roads in this county is of vital importance. Preliminary surveys, plans, specifications and estimates of cost have been furnished for a macadam road 12 feet wide and 6½ inches deep, running from Guion, a railroad point, to Melbourne, the county seat. Petitions are now in circulation and are being freely signed. An earth road has also been planned from Melbourne to Mt. Olive which will open up a large territory and give an additional connection with the railroad. About one-third of the county is rough. Plenty of rock is available for macadam. The Department furnished engineering services for a demonstration road from Ruddels toward Mountain View. This road is in use and has created favorable comment.

JACKSON COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Newport Via Diaz to Herring Chapel	3 00	Macadam	\$67,281 52	Alexander.
	7 20			
Newport Via Amazon, Beedville	39 25	Macadam	219,556 34	Alexander.

Preliminary surveys, plans, specifications and estimates of cost have been furnished for a bituminous macadam road 16 feet wide from Newport to Herring Chapel, and for a Water-bound macadam road 14 feet wide and 6½ inches deep, running from Newport to Beedville with laterals. These two roads are following practically the system outlined by this Department over two years ago when a report was submitted on a county system. On both of these districts the county has agreed to construct the bridges. The district from Newport to Herring Chapel has been organized and commissioners appointed. Robt. Holden, chairman and Robt. Wilman,

secretary, Newport; Bowman and McDermon are construction engineers. Contract will be let immediately. Petitions being circulated in District No. 2. The county is level.

JEFFERSON COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Barraque St. Extension—Pine Bluff.50	Gravel	\$ 3,010 25	Alexander.
6th Ave. Extension—Pine Bluff	1.50	Gravel	7,925.50	Alexander.
Cherry Street Road	1.50	Gravel	13,011.00	Alexander.
Pine Bluff to Lincoln Co. Line toward Tarry, with laterals	18.40	Gravel	98,262.37	Special Act.
Pine Bluff Via Althemier to Humphreys	39.36	Macadam	195,755.86	Alexander.
Pine Bluff Via Tucker to Lonoke Co. Line	19.45	Macadam	93,939.24	Alexander.

Has built more permanent roads in the last 4 years than any county in the State. There has been constructed, approximately, 125 miles, including concrete, gravel, stone base, gravel top, bituminous macadam and water-bound macadam. During the last year we have furnished preliminary surveys, plans, specifications and estimates of cost for the Cherry street road, asphaltic macadam (penetration) 18 feet wide; 6th avenue road, gravel 18 feet wide; Barraque street extension 16 feet wide, gravel; Pine Bluff to Tarry, connecting up with the Lincoln County system. All of these districts have been completed except the Cherry street road which is 75 per cent completed. Wm. J. Parkes is the engineer and is also in charge of 6th avenue road. White, Humphreys and Tovey were engineers in charge of District No. 7, from Pine Bluff to Tarry and of Barraque Street extension. Commissioners have also been appointed for District No. 15, which is a gravel road 12 feet wide and 6 inches deep. Preliminary surveys, plans, specifications and estimates were furnished by this Department. White, Humphreys and Tovey are engineers in charge of construction. Surveys were also furnished for District No. 14, which was not organized because of lack of majority. There is no material available for road construction in the county, all has to be shipped in. Another forward step this county has taken is the placing of all county road matters in the hands

ROAD IMPROVEMENT DISTRICT NO. 15,
JEFFERSON COUNTY, ARKANSAS.

August 10, 1916.

WHITE, HUMPHREYS & TOVEY, ENGINEERS.

Name of Bidder	Asphalt (Penetration) Per Gallon Delivered	Asphalt Road Oil Per Gallon Delivered
S. E. & C. J. Finley.....	\$0.0553	\$0.0533
John Baker.....	0.06077	0.0548
Magnolia Petroleum Co.....	0.06	0.05
Barber Asphalt Co.....	0.132	0.104
Standard Oil Co.....	0.0594	0.0499
Barret Mfg. Co.....	0.11 Tarvia X	0.11 Tarvia A 0.09 Tarvia B

Approximate Quantities: Asphalt, 321,000 gals.; Road Oil, 128,500 gals.

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SCHEDULE OF BIDS, ROAD IMPROVEMENT DISTRICT NO. 15,
JEFFERSON COUNTY, ARK., AUGUST 10, 1916.

No. 1—Water-bound Macadam

	S. E. & C. J. Finley	J. A. Per- due & Co.	Edgar Howard	Kaw Paving Co.	Ame.ican Cons. Co.	Chapin Col- glazier	M. J. Cole, Jr.	Me- Intosh Walton	Hensley, Brown & Froley
Total, Items 1-26		\$101,346	\$111,023	\$110,098	\$100,430	\$109,544	\$101,799	\$117,478	\$103,079
Rock		78,622	78,622	78,622	78,622	78,622	78,622	78,622	78,622
Asphalt Road Oil	\$6,849	6,412	6,412	6,412	6,412	6,412	6,412	6,412	6,412
Hauling & Distributing Asphalt	7,388	3,212	6,435	8,995	3,855	3,855	3,855	3,855	6,078
Spreading Sand	2,867	1,925	2,567	2,567	2,567	5,135	7,702	3,851	2,567
Total Cost		\$191,518	\$205,060	\$206,695	\$191,886	\$203,568	\$198,391	\$210,218	\$196,759

No. 2—Stone and Gravel

Total, Items 1-26		\$102,951	\$96,760	\$108,320	\$99,721	\$109,336	\$101,808	\$115,783	\$103,084
Rock and Gravel		37,891	87,891	87,891	87,891	37,891	87,891	87,891	87,891
Asphalt Road Oil		6,412	6,412	6,412	6,412	6,412	6,412	6,412	6,412
Hauling & Distributing Asphalt		3,212	6,435	8,997	3,356	3,855	3,855	3,855	6,078
Spreading Sand		1,925	2,567	2,567	2,567	5,135	7,702	3,351	2,567
Totals		\$202,392	\$200,066	\$214,187	\$200,447	\$212,629	\$207,729	\$217,793	\$206,434

No. 3—Gravel Road

Total, Items 1-25		\$101,879	\$91,776	\$104,678	\$95,437	\$103,268	\$94,197	\$111,627	\$100,512
Gravel		90,137	90,137	90,137	85,573	90,137	90,137	90,137	88,996
Asphalt Oil		6,412	6,412	6,412	6,412	6,412	6,412	6,412	6,412
Hauling & Distributing Asphalt		3,212	6,435	8,995	3,855	3,855	3,855	3,855	6,078
Spreading Sand		1,925	2,567	2,567	2,567	5,135	7,702	3,851	2,567
Totals		\$203,667	\$197,328	\$212,790	\$193,845	\$208,807	\$202,204	\$216,833	\$204,566

No. 4—Bituminous Macadam

Totals, Items 1-24		\$104,866	\$118,143	\$113,653	\$103,602	\$111,727	\$104,642	\$119,198	\$106,508
Rock		80,087	80,087	80,087	80,087	80,087	80,087	80,087	80,087
Spreading Pea Gravel		1,925	5,131	2,567	7,702	2,567	7,702	5,135	2,567
Asphalt		17,751	17,751	17,751	17,751	17,751	17,751	17,751	17,751
Hauling & Distributing Asphalt		9,630	19,260	22,470	16,050	16,050	12,840	9,630	15,183
Totals		\$214,261	\$240,372	\$236,529	\$225,193	\$228,183	\$223,023	\$231,801	\$222,098

NOTE—All Rock, Gravel and Asphalt to be furnished by the District.

WHITE, HUMPHREYS & TOVEY, Engineers.

ROAD IMPROVEMENT DISTRICT NO. 15, JEFFERSON COUNTY, ARKANSAS, AUGUST 10, 1916.

Item No.	DESCRIPTION.	Approximate Quantities	UNIT PRICES.								
			S. E. and C. J. Finley	J. A. Perdue & Co.	Edgar Howard	Kaw Paving Co.	American Cons. Co.	Chapin Colglazier	M. J. Cole	Mc-Intosh Walton	Hensley, Brown & Froy
1	Excavation and embankment, rolled to grade, 1,000 ft. free haul.....	157,000 c. y.		\$ 0 18	\$ 0.18	\$ 0.22	\$ 0.20	\$ 0.20	\$ 0.22	\$ 0.23	\$ 0.185
2	Clearing and grubbing.....	24 A.		75 00	65.00	80.00	75.00	100.00	100.00	75.00	125.00
Hauling and placing metal culverts:											
3	12 inches diameter.....	450 ft.		0.18	0.18	0.18	.20	.20		.18	.20
4	15 inches diameter.....	12 ft.		0.20	0.14	0.20	.20	.25		.20	.20
5	18 inches diameter.....	525 ft.		0.22	0.18	0.22	.20	.30		.22	.20
6	24 inches diameter.....	152 ft.		0.24	0.20	0.25	.20	.40		.24	.20
7	30 inches diameter.....	30 ft.		0.26	0.20	0.27	.20	.45		.26	.20
8	36 inches diameter.....	24 ft.		0.30	0.20	0.30	.20	.50		.28	.20
9	Moving fence.....	23 mi.		60.00	40.00	95.00	80.00	70.00		75.00	80.00
Loading and hauling rock:											
10	0-1 miles haul.....	11,096 c. y.		0 40	0.24	0.36	.45	0.38	.30	.38	.39
11	1-2 miles haul.....	14,365 c. y.		.70	.40	.65	.60	.65	.50	.65	.60
12	2-3 miles haul.....	11,091 c. y.		1.00	.72	.93	.80	.93	.75	.93	.90
13	3-4 miles haul.....	5,328 c. y.		1.20	.96	1.20	1.10	1.23	1.05	1.20	1.20
14	4-5 miles haul.....	4,187 c. y.		1.40	1.20	1.50	1.35	1.51	1.35	1.50	1.50
15	5-6 miles haul.....	6,439 c. y.		1.60	1.44	1.80	1.50	1.81	1.65	1.77	1.90
16	6-7 miles haul.....	4,543 c. y.		1.80	1.68	2.05	2.00	2.20	1.95	2.10	2.20
Loading and hauling gravel:											
17	0-1 miles haul.....	11,096 c. y.		.40	.43	.36	.45	.38	.30	.38	.39
18	1-2 miles haul.....	14,365 c. y.		.70	.69	.65	.60	.65	.50	.65	.60
19	2-3 miles haul.....	11,091 c. y.		1.00	.95	.93	.80	.93	.75	.93	.90
20	3-4 miles haul.....	5,328 c. y.		1.25	1.21	1.20	1.10	1.23	1.05	1.20	1.20
21	4-5 miles haul.....	4,187 c. y.		1.50	1.47	1.50	1.35	1.51	1.35	1.50	1.50
22	5-6 miles haul.....	6,439 c. y.		1.75	1.73	1.80	1.50	1.81	1.65	1.77	1.90
23	6-7 miles haul.....	4,543 c. y.		2.00	1.99	2.05	2.00	2.20	1.95	2.10	2.20
24	Spreading and rolling rock.....	57,049 c. y.		0.20	0.60	0.20	.15	.18	.10	.25	.15
25	Spreading and rolling gravel.....	57,049 c. y.		0.20	0.08	0.15	.13	.16	.10	.25	.15
26	Spreading binder (base).....	256,724 s. y.		0.0075	0.005	0.01	.015	.02	.03	.015	0.015
30	Hauling and distributing asphaltic road oil.....	128,500 gal.	0 0525	0.025	0.05	0.07	.03	.05	.03	.03	.0473
33	Spreading sand or pea gravel.....	256,734 s. y.	0.01	0.0075	0.02	0.01	.03	.01		.02	.01
36	Hauling and distrib. asphalt.....	321,000 gal.	0.0595	0.03	0.06	0.07	.05	.05	.04	.03	.0473

WRITE, HUMPHREYS & TOVEY, Engineers.

SCHEDULE OF BIDS, ROAD IMPROVEMENT DIST. NO. 7.

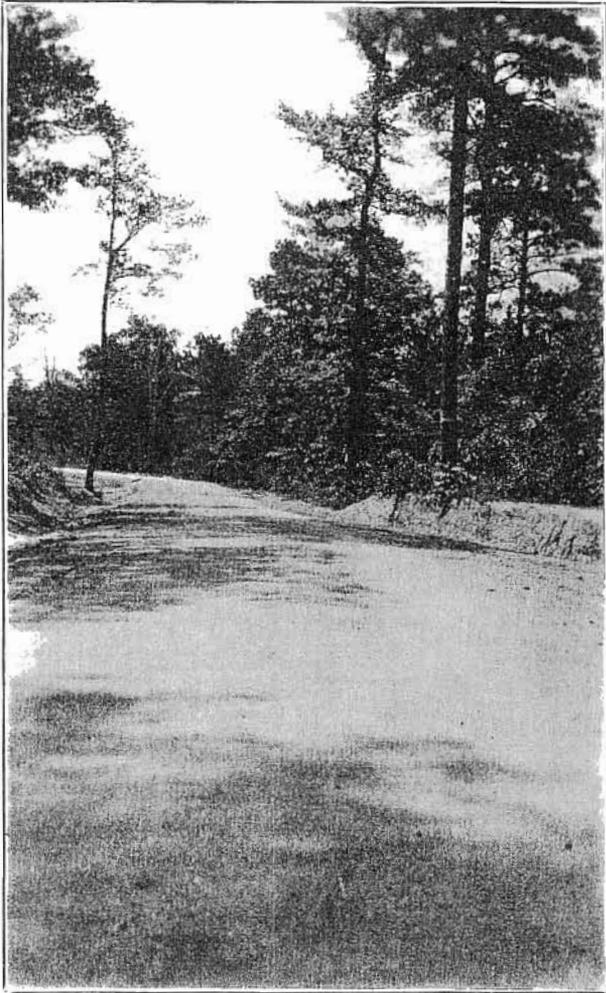
APPROXIMATE QUANTITIES	CONTRACTORS DESCRIPTION	Mt. Vernon Const Based on 2 and 2½¢ rate		Hensley & Perdue Based on 3¢ rate		R. M. Galbraith Based on 3¢ rate		J. B. Bateman & Co.		Ewing & Shields		M. J. Cole, Jr.		M. C. Burke & Co. Based on 3 and 3½¢ rate	
		\$	¢	\$	¢	\$	¢	\$	¢	\$	¢	\$	¢	\$	¢
55,000 yds	Excavation	\$0 22	\$12,100 00	\$0 10½	\$10,725 00	\$0 22	\$12,100 00	\$0 20	\$11,000 00	\$0 19¼	\$10,862 50	\$0 20	\$11,000 00	\$0 22	\$12,100 00
17 acres	Clearing and Grubbing	72 60	1,232 50	100 00	1,700 00	70 00	1,190 00	60 00	860 00	65 00	1,105 00	60 00	860 00	75 00	1,275 00
150 175 405 363	Placing Corr. Metal Culverts: 12 inches 15 inches 18 inches 24 inches	09 12 16 21	19 60 21 00 64 80 76 23	15 15 29 25	22 50 26 25 81 00 90 78	16 26 25 35	24 00 35 00 101 25 127 06	16 17 20 20	22 50 29 75 81 00 72 50	10 15 20 25	13 00 26 25 81 00 90 75	75 92 1 09 1 42	112 50 161 00 341 45 515 46	20 25 30 30	30 00 43 75 121 50 108 90
50 cu. yds	Concrete Head Walls for Metal Culverts	4 50	175 00	10 00	500 00	9 90	495 00	6 00	300 00	9 75	487 50	10 00	500 00	10 00	500 00
2,480 rds	Fence Moving old fence New 4-wire fence	2 29½	5,651 60	15	472 00	.28 .25	794 40	90½ 60½	2,232 00	55½ 75½	1,612 00	60½ 50½	1,240 00	16½ 70½	372 00
8,315 cu. yds 13,857 cu. yds	Dumping, Grading, and Rolling to Grade. Rock Gravel	21 20½	1,746 15 2,840 69	16 16	1,247 25 2,078 55	25 22	2,078 75 3,048 64	25 28	2,078 75 3,464 25	30	7,790 20	10 10	831 50 1,385 70	30 30	2,494 50 4,160 60
1,027 cu. yds. 760 cu. yds. 1,346 cu. yds. 1,568 cu. yds. 1,451 cu. yds. 378 cu. yds. 489 cu. yds. 278 cu. yds.	Loading and Hauling Rock: 1 to 2 miles haul 2 to 3 miles haul 3 to 4 miles haul 4 to 5 miles haul 5 to 6 miles haul 6 to 7 miles haul 7 to 8 miles haul 8 to 9 miles haul	.65 .85 1 23 1 68 1 72 1 83 2 30 3 06	667 56 637 60 1,646 08 3,090 48 2,564 32 1,789 74 1,124 70 847 90	.60 .90 1 20 1 50 1 80 2 10 2 40 2 70	616 20 675 00 1,615 20 2,984 00 2,983 80 2,053 80 1,173 60 750 60	.65½ 1 00 1 35 1 70 2 05 2 40 2 75 3 10	684 67 750 00 1,817 10 3,325 20 3,066 55 2,347 20 1,444 75 861 60	.65 .95 1 20 1 45 2 00 2 35 2 75 2 50	677 55 712 50 1,615 20 2,836 20 2,982 00 2,200 60 1,066 25 696 00			1 00 1 30 1 60 1 90 2 20 2 50 2 80 3 10	1,027 00 975 00 2,163 60 3,716 40 3,286 20 2,445 00 1,389 20 861 80	.60 .85 1 17 1 45 1 58 1 83 2 30 2 90	604 20 637 60 1,574 82 2,836 20 2,869 78 1,789 74 1,184 70 831 22
1,711 cu. yds 1,250 cu. yds 2,245 cu. yds 3,269 cu. yds 2,486 cu. yds 1,629 cu. yds 845 cu. yds 463 cu. yds.	Loading and Hauling Gravel: 1 to 2 miles haul 2 to 3 miles haul 3 to 4 miles haul 4 to 5 miles haul 5 to 6 miles haul 6 to 7 miles haul 7 to 8 miles haul 8 to 9 miles haul	.63 .80 1 29 1 63 1 67 1 78 2 75 2 95	1,077 90 1,000 00 2,194 00 4,086 27 4,149 95 2,899 02 2,241 25 1,366 85	.60 .90 1 20 1 50 1 80 2 10 2 40 2 70	1,022 60 1,125 00 2,694 00 4,888 50 4,473 00 3,420 90 1,956 00 1,250 10	.66 1 00 1 34 1 69 2 04 2 39 2 74 3 09	1,129 25 1,237 60 3,008 30 5,507 71 5,069 90 3,893 21 2,234 10 1,480 67	.68 1 06 1 26 1 45 2 00 2 25 2 26 2 60	1,132 15 1,187 50 2,654 00 4,755 66 4,970 00 3,665 25 1,853 75 1,157 50	.65 95 1 25 1 55 1 85 2 16 2 45 2 75	1,779 70 1,852 50 4,426 25 7,923 25 7,355 60 6,035 06 3,194 80 1,960 75	1 00 1 30 1 60 1 90 2 20 2 50 2 80 3 10	1,711 00 1,026 00 3,692 00 6,199 10 5,467 00 4,072 50 2,282 00 1,435 30	.65 .90 1 22 1 65 1 78 2 08 2 60 3 30	1,111 55 1,125 00 2,738 50 5,367 36 4,423 30 3,288 22 2,119 00 1,627 90
TOTALS			\$57,044 25		\$60,179 20		\$57,690 61		\$54,260 75		\$55,598 10		\$59,142 71		\$56,257 90



JEFFERSON COUNTY, ROAD No. 10

**After Treatment of Gravel Road With One-Half Gallon of
Asphaltic Oil per Square Yard**

White, Humphreys & Tovey, Engineers, Pine Bluff



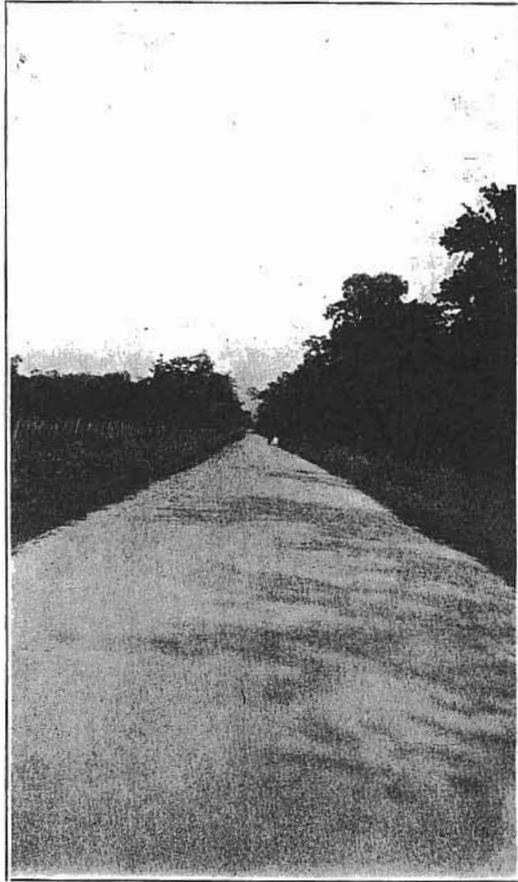
JEFFERSON COUNTY, ROAD No. 7

Finished Gravel Road

White, Humphreys & Tovey, Engineers, Pine Bluff



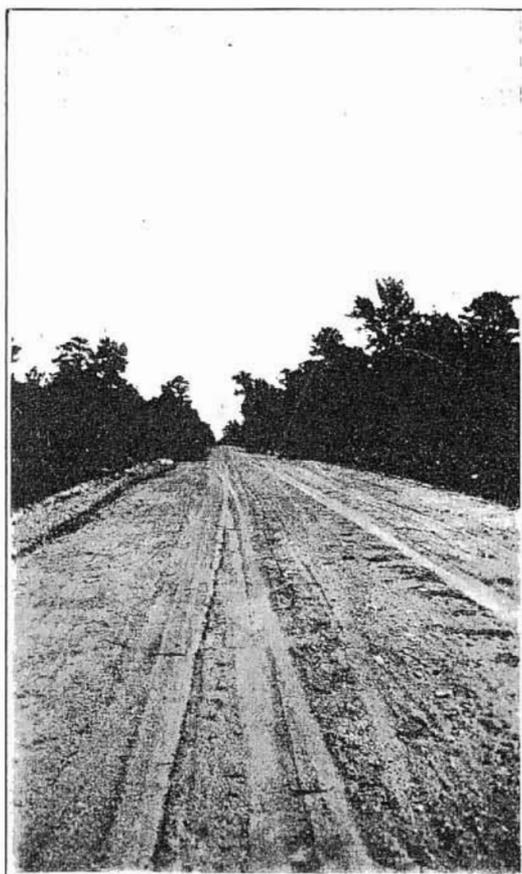
JEFFERSON COUNTY, ROAD No. 4, DOLLAR-WAY
Dark Section Along Center of Road Represents Dollar-way
Treatment, Bordered With 3 ft. Gravel Shoulders
White. Humphrey & Tovey, Engineers, Pine Bluff



JEFFERSON COUNTY, ROAD No. 5

Alexander Bottom

White, Humphrey & Tovey, Engineers, Pine Bluff



JEFFERSON COUNTY, ROAD No. 7

Gravel Before Rolling



JEFFERSON COUNTY, ROAD No. 10
Gravel Before Applying Asphalt Treatment of
One-Half Gallon Per Square Yard

of a county engineer. This system has been entirely justified in this county, all work now being done is of a permanent nature.

JOHNSON COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Pope Co. Line Via Knoxville, Clarksville, Hartman to Franklin Co. Line	34.81	Macadam	\$189,177.34	Alexander.
Clarksville Via Ludwig to Mt. Vernon and laterals	7.16	field Stone	33,438.57	Alexander.
	2.23	base, gravel top, earth		

Being between Little Rock and Fort Smith and realizing the importance of a highway between these cities the citizens have started the organization of a district from their part of this highway. Preliminary surveys, plans, specifications and estimates of cost have been furnished and petitions are now in circulation for a macadam road 12 feet wide and 6½ inches deep on a 22-foot dump. We are informed that a majority have signed. We have also furnished plans for a road district which is being organized from Clarksville to Ludwig. This road will tap one of the greatest peach orchard sections of the State. Gravel on a stone base will be used. The county has plenty of stone which will, of course, hold down the construction cost. Earth roads and bridges are being improved as rapidly as possible.

LAFAYETTE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Bradley to Spring Bank	10.65	Gravel	\$69,356.00	Alexander.

Started the construction of gravel roads about four years ago and some very creditable roads have been built. The Department furnished plans, specifications and estimates of cost for the first steel bridge erected in the county. The bridge spans Bodcaw Creek near Stamps, and is 240 feet long. We have also furnished plans, specifications and estimates of cost for a gravel road 12 feet wide from Bradley to Spring Bank. A majority have signed the petitions for an improve-

ment district. Lund and Hill, Little Rock, are the construction engineers. Road conditions are rapidly improving. The county has a large gravel supply at Lewisville.

LAWRENCE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Imboden Via Smithville to Jessup	18 60	Macadam	\$ 56,394 80	Alexander.
Randolph Co. Line Via Black Rock, Lynn to Strawberry	21 50	Macadam	83,114 18	Alexander.
Walnut Ridge to Rhea Bridge and Walnut Ridge Via Murta to Randolph Co. Line	32 23	Macadam	105,797 76	Alexander.
Minturn West to Running Water Ditch	3 20	Macadam	14,860 16	Alexander.

Road Improvement District No. 1 has been organized and commissioners have been appointed. Mr. F. A. Pritchett, Walnut Ridge, is the engineer in charge. This district will construct a macadam road 12 feet wide and 6 inches deep from Walnut Ridge to Rhea's Bridge. All preliminary surveys, plans, etc., were furnished by this Department. We have also furnished preliminary plans, etc., for a macadam road 9 feet wide from Minturn West; for a macadam road 12 feet wide from Black Rock to Strawberry; for a macadam road 9 feet wide from Walnut Ridge north. Petitions are in circulation for all of these districts. Plans, etc., have been furnished for a macadam road 12 feet wide from Imboden to Jessup. Petitions have been signed by a majority for this district. All stone used can be secured in Lawrence county. Plans, specifications, etc., have been furnished for 3 steel bridges. Earth roads are being gradually improved.

LEE COUNTY.

Lee county secured authority from the legislature of 1915 to contract all work and pay the 3 mill road tax into a central fund. On this plan money was borrowed and engineers employed and all work let by contract. It has also meant the grading of all important roads and the installation of permanent culverts and in most cases, bridges. There is now a well defined movement to place a surface on these roads. There is no road material in the county. A connection between Helena, Marianna, Forrest City, Harrisburg, Wynne, Jonesboro, Paragould and Piggott is much desired.

LINCOLN COUNTY.

Began the construction of a system of roads in 1914, connecting up with Pine Bluff, Gould and Brady. The road constructed in District No. 1 running from Star City to Tarry was gravel on a stone base 10 feet wide, dump 22 feet wide, with concrete culverts and bridges. The other roads were gravel 12 feet wide. There is some gravel in the county but because of location it was not available for all work done. There is work now being done on the road from Star City to the Drew county line toward Monticello. Several steel bridges have been constructed.

LITTLE RIVER COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Ashdown to Ogden; Ashdown to Richmond	15.00	Gravel	\$ 59,591.00	Alexander
Red River North to Ashdown (No. 5)	5.79	Gravel	11,859.75	Alexander
Red River North to Ashdown (No. 4)	8.22	Gravel	22,446.64	Alexander
Ashdown Via Foreman to Morris Ferry, laterals to Lanesport, Lewis Ferry and Richmond.	48.54	Gravel	223,683.50	Alexander
Town of Foreman	5.18	Gravel	14,260.50	Special Act

Was the first county to construct a road under the Alexander road law. The road constructed is gravel 12 feet wide and 6 inches deep on a 22-foot dump, and runs from Ashdown to Ogden and a lateral from Ashdown toward Richmond. Mr. A. S. Fellows, Ashdown, was construction engineer. The preliminary surveys, plans, etc., were furnished by this department. We have also furnished plans, etc., for Districts Nos. 4 and 5 for a road from Morris Ferry through Foreman to Ashdown, all to be of gravel 12 feet wide. The Morris Ferry road will be a part of the through road in Western Arkansas. Gravel can be secured locally for the Morris Ferry road and for Districts Nos. 4 and 5. On District No. 1 gravel was shipped in. The county courts of Little River and Sevier counties have appropriated funds jointly to construct a bridge across Little River at Morris Ferry. The districts now being organized will give the county a very complete system of good highways.

LOGAN COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Sebastian Co. Line Via Booneville, Magazine, Blue Mountain to Yell Co. Line.....	20.00	Macadam	\$75,000.00	Alexander.
Booneville to Mt. Pisgah and Sugar Grove.....	9.15	Earth	5,189.50	Donation.

Surveys have been furnished for a road running from Booneville to Sugar Grove, the improvement contemplates a well-graded and drained road. Some work has been done on this road. We have also furnished preliminary surveys for a proposed road running east and west across the county through Booneville for a proposed Road Improvement District. Progress is being made on the earth roads. Rock for the base of macadam is plentiful.

LONOKE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Lonoke to Wattensaw.....	5.25	Macadam	\$18,948.25	Alexander.

Lonoke county has about finished a complete road system. More water-bound macadam roads have been built in this county in the last 3 years than any other county in the State. There being no material within the county all stone used was shipped from Little Rock. During the last two years Districts Nos. 6, 7 and 8 were completed. District No. 6 connects Toltec with Scotts. It is a high-class water-bound macadam and in charge of Dickinson and Watkins, engineers, Little Rock. Dickinson and Watkins were also in charge of District No. 8 in the vicinity of Clear Lake, connecting Toltec with England. District No. 7 was in charge of Mr. W. G. Stahl, engineer, Little Rock, and connects Lonoke with Little Rock and Scotts. It is a water-bound macadam 12 feet wide on a 22-foot dump. Construction is now going forward on an extension to District No. 4 toward Wattensaw. A part of the Lonoke-Little Rock road by way of Galloway is to be re-surfaced with asphaltic macadam (penetration method). This work was laid out by the



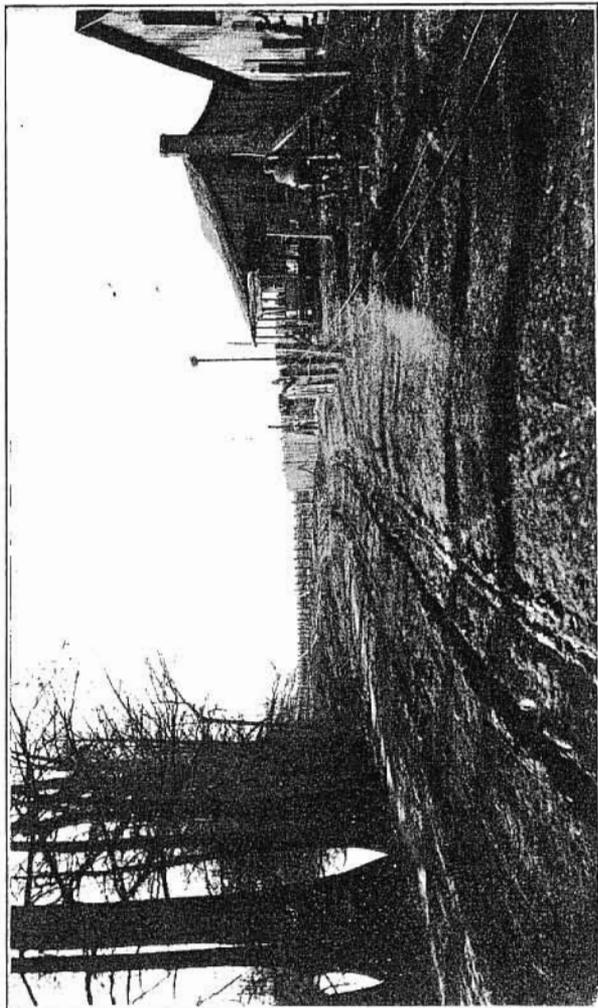
LONOKE COUNTY, ROAD No. 9

Macadam Road.

Dickinson & Watkins, Engineers, Little Rock

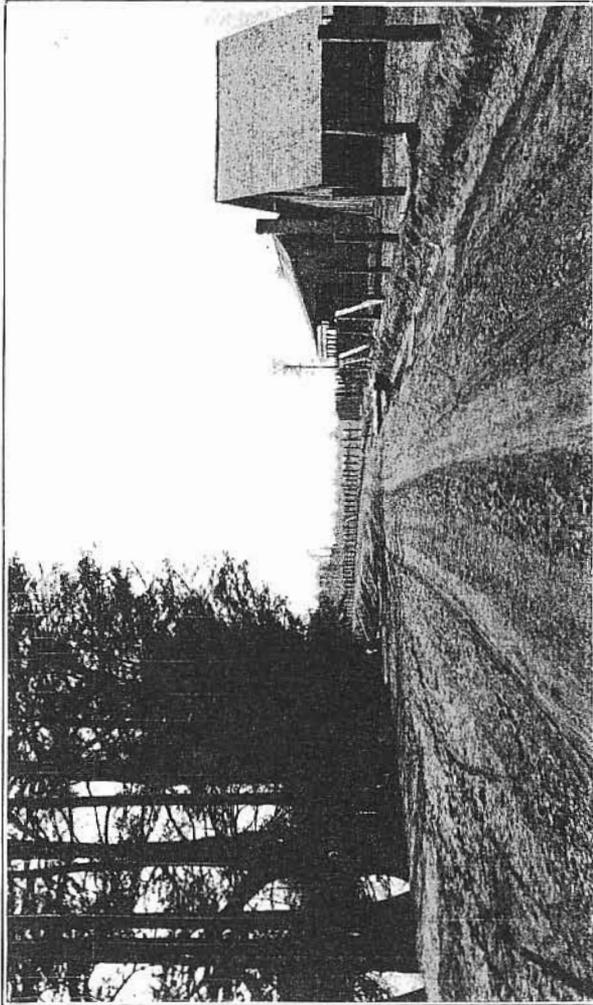


LONOKE COUNTY, ROAD No. 6
Showing Graded Road After a Hard Rain
Dickinson & Watkins, Engineers, Little Rock



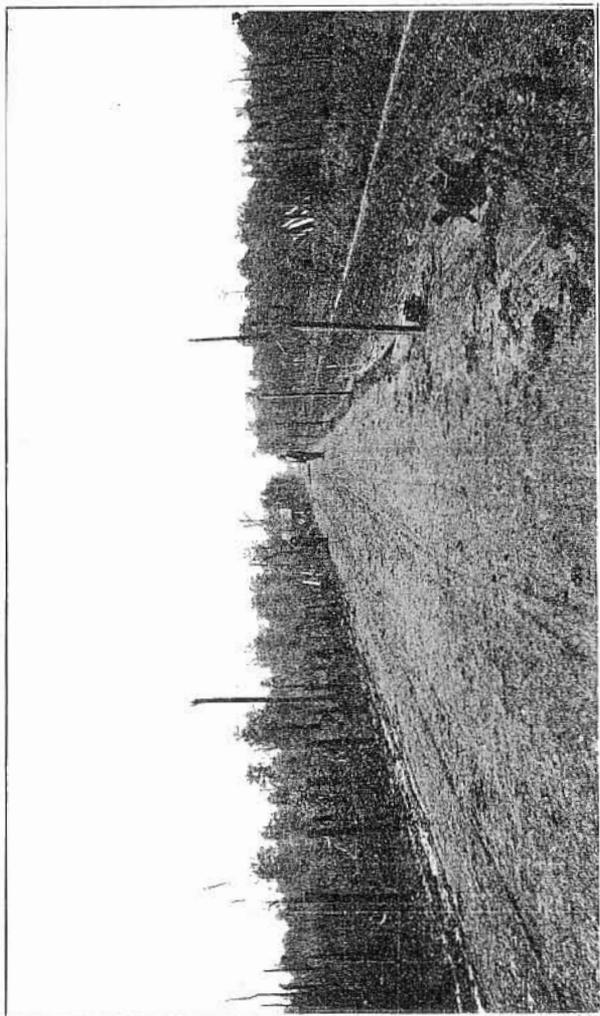
LONOKE COUNTY, No. 6
Road Before Construction

Dickinson & Warkins, Engineers, Little Rock



LONOKE COUNTY, No. 6

Macadam Road Completed, Showing Proper Treatment of Roads Built on Bayous, by Not Cutting Ditch on Bayou Side of Road



LONOKE COUNTY, No. 6

Macadam Road, Showing Wide Right of Way Necessary to Take Care of the Drainage in Flat Country
Dickinson & Watkins, Engineers, Little Rock

department. The construction is in charge of Mr. W. G. Stahl, engineer, Little Rock. The construction of a road from Lonoke to Carlisle is now contemplated which will become a part of the Little Rock-Memphis Highway.

MARION COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Yellville, Rush, Lee's Mountain	1.74	Earth	\$2,200.00	Donation.

Because of the recent development of Marion county's mineral deposits, plans have been furnished for a road running from Yellville to Rush. The road was entirely re-located by our engineer in order to eliminate excessive grades. Construction work will begin at once. Ample material supplies is available over the entire county. Railroad transportation being very inadequate the construction of good roads is one of the most important sides of the mineral development in this county.

MADISON COUNTY.

Since Madison county is essentially a fruit-growing county the improvement of its roads is of vital importance. There is a well organized effort at the present time to get a first-class road from Huntsville to Fayetteville, Springdale and Rogers. The general improvement of highways is now going forward. Material for surfacing is conveniently located. The county is mountainous.

MILLER COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Texarkana Via Genoa to McKinney Bayou	15.75	Gravel	\$ 51,507.61	Alexander.
Texarkana Via Fort Lynn to La. Line	32.93	Gravel	145,000.00	Alexander.
Texarkana to Fulton	20.00	Gravel	300,000.00	Special Act.

Miller county now has the largest Road Improvement District in the State. It was authorized by the last legislature. This district will construct 60 miles of gravel roads

in the vicinity of Texarkana; one road will run from Texarkana to Fulton, which will be a part of the Little Rock-Texarkana Highway. Gravel surface 14 feet wide on main roads and 12 feet wide on lateral roads will be used, all dumps to be above high water and 22 feet wide. This district is also authorized to erect a steel bridge over Red River at Fulton. Lund and Hill, Little Rock, are engineers in charge.

We have also furnished plans, specifications and estimates of cost for a gravel road 12 feet wide from Texarkana South to Fort Lynn and for a road from Texarkana to McKinney Bayou. Local gravel will be used on all work. Rapid improvements have been made on the earth roads.

MISSISSIPPI COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Burdette toward Blytheville.....	5.88	Earth	\$ 9,087.98	Alexander.
Etowa District.....	17.81	Earth	31,955.00	Alexander.
Blytheville, Amorel, Barfield, Yarboro	35.07	Concrete	289,891.35	Alexander.
Mo. Line Via Gosnell to Blytheville....	13.90	Concrete	129,454.38	Alexander.
Blytheville Via Big Lake to Manilla..	21.83		179,656.64	Alexander.

Mississippi county has been furnished by this department plans, specifications and estimates of cost for a road district from Blytheville to Big Lake; for a road from Blytheville to Gosnell, and from Blytheville to Barfield. All of these districts will build concrete roads from 9 to 12 feet wide with gravel shoulders on a 22-foot dump. Petitions are now in circulation. Hon. E. E. Alexander, Sam Costen and C. M. Buck, Blytheville, are the attorneys for the district.

A district is also being organized to grade and drain a road in the vicinity of Etowa. Surveys, etc., were furnished by the department. J. W. Lamb, Osceola, is attorney for the district. A report is now about ready for a proposed road from Burdette toward Blytheville. Steel bridges have been constructed over a great many of the drainage ditches and streams. A district was organized in the vicinity of Osceola and Luxora which was found to be invalid because of a decision of the Supreme Court. When the roads now contemplated are finished Mississippi county will have more concrete roads than any county in the State.

MONROE COUNTY.

The road problems of Monroe county are very difficult because of some very bad bottoms. It is now proposed that a road be built from the Prairie county line to the St. Francis county line, as a link in the Memphis road. A demonstration gravel road was built under the supervision of the Federal Government which has shown what can be done and has brought the necessity of good roads to the front. No local material is available. By consolidating several small road districts and placing the 3 mill road tax in the hands of business men, the roads near Brinkley have been greatly improved and several new bridges erected.

MONTGOMERY COUNTY.

Has several very good earth roads. The road to Crystal Springs and Hot Springs has been greatly improved by the Forestry Department through the reserve. Several steel bridges have been erected. The last quorum court authorized the county judge to take the necessary step to secure surveys for a county system of roads. The road issue is an important one in this county because of the lack of railroad facilities. A road from Mena through Montgomery county to Hot Springs is much desired. Surface material for roads can be secured over the entire county.

NEVADA COUNTY.

Nevada county has some of the best graded and cared for earth roads in the State. There has been very little permanent road construction to date. We are informed, however, that the spring will see the beginning of the construction of a road North and South through the county as a link of the Little Rock-Texarkana Highway. Gravel can be secured locally at a very small cost. Steel bridges have been erected over most streams.

NEWTON COUNTY.

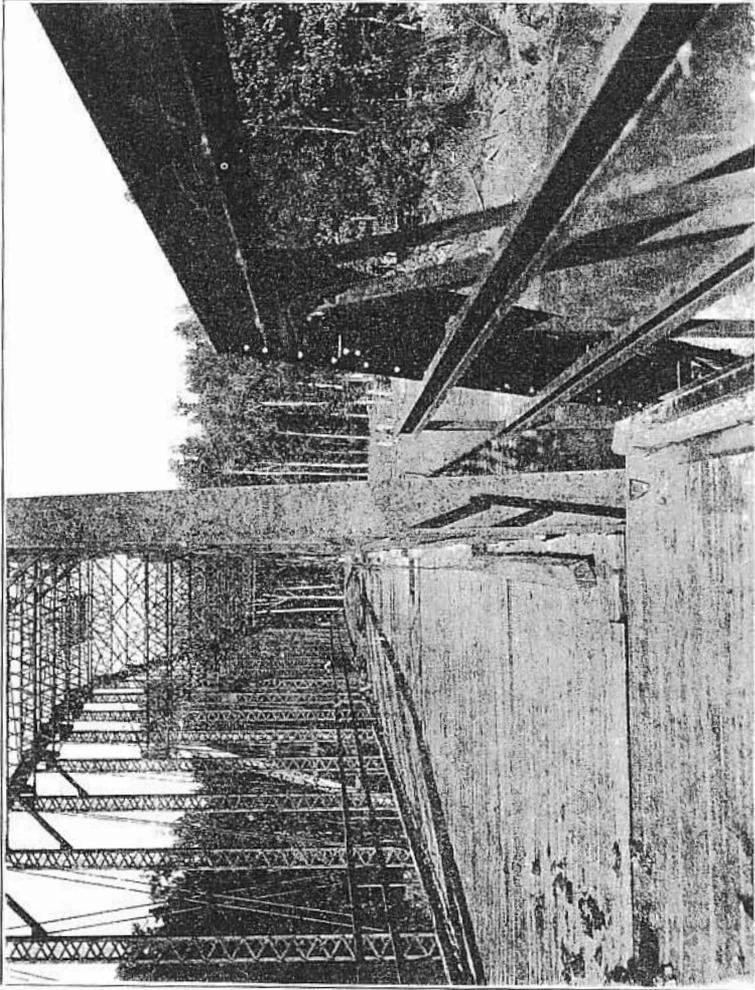
Location	Miles	Type	Estimated Cost	Under What Law
Jasper to Harrison Road	11.30	Gravel	\$56,073.00	Alexander.

Good roads is the crying need of Newton county since it has no railroad within its border. The development of timber and mineral interests has been retarded because of the absence of roads. This fact is realized by the citizens. We have furnished plans, etc., for a road running from Jasper, the county seat, to Harrison in Boone county. A road is also under construction by the Forestry Department from the Southern county line to within a short distance of Jasper. When this work is completed Newton county will have a road entirely across the county north and south. The first steel bridge was built by the county over Buffalo River on the Harrison road.

OUACHITA COUNTY.

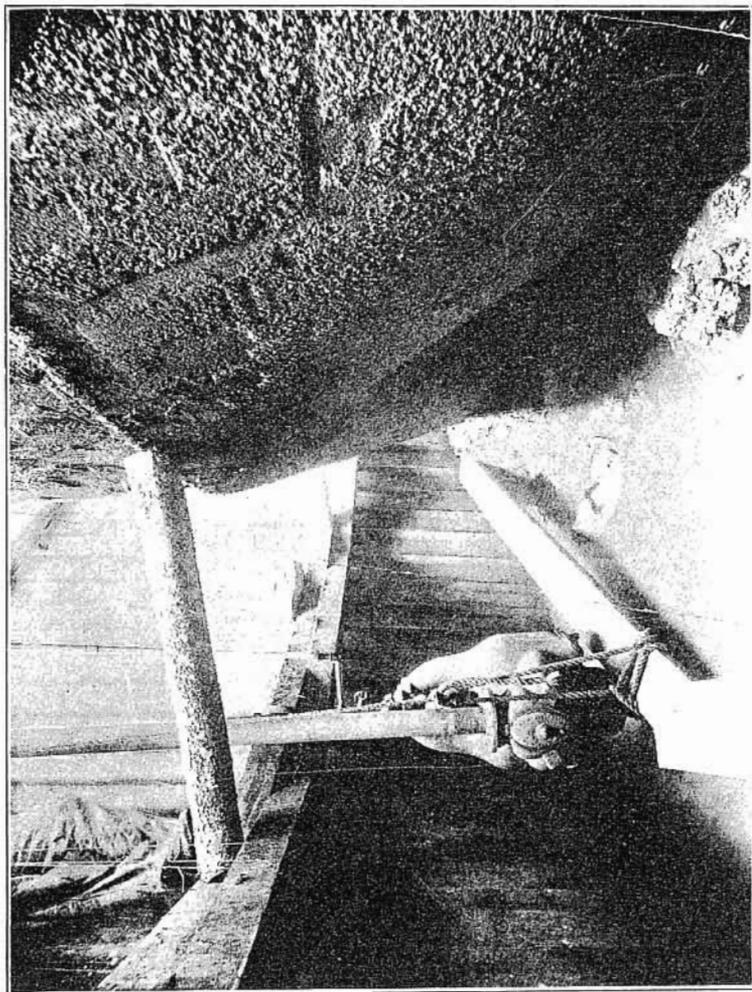
Location	Miles	Type	Estimated Cost	Under What Law
Camden to Bearden; Camden to Holly Springs	35.33	Gravel	\$122,210.14	Alexander.
Camden Via Buena Vista to Stephens ..	20.50	Gravel	95,098.40	Alexander.
Camden West to Nevada Co. Line on Rosston Road	15.70	Sand Clay	33,897.60	Alexander.

Ouachita county has constructed several miles of very good gravel roads in the vicinity of Bearden and Camden. Preliminary surveys have been furnished for a gravel road 12 feet wide from Camden to Bearden, and from Camden to Stephens. Local gravel of good quality is plentiful at Bearden. Plans, etc., were also furnished for a sand-clay road from Camden to Rosston on the Lewisville road. Petitions are now in circulation for this district and are being freely signed. Several miles of roads have been graded. The department advised with the county judge several times relative to the bridge over the Ouachita River. The bridge is a turn bridge. The center piers began to settle to the north, because of poor workmanship, it was necessary to rebuild this pier. The repair work was in charge of I. A. Baum of Baum



OUACHITA COUNTY

No. 1—October, 1915. Ouachita River Bridge Near Camden. Swing Span Out of Adjustment Due to Poor Construction of Pivot Pier. This Pier Has to be Rebuilt
Baum & Haynes, Engineers, Texarkana



OUACHITA COUNTY

No. 2—May 31, 1916. View of Pivot Pier Inside of Cofferdam, Showing Brace to Prevent Topping
Baum & Haynes, Engineers, Texarkana

and Haynes, Texarkana. The county sued the bridge company for the cost of repairs which were settled out of court. It seems the original engineer on construction was also an employ of the bridge company. Several other important steel bridges have been constructed.

PERRY COUNTY.

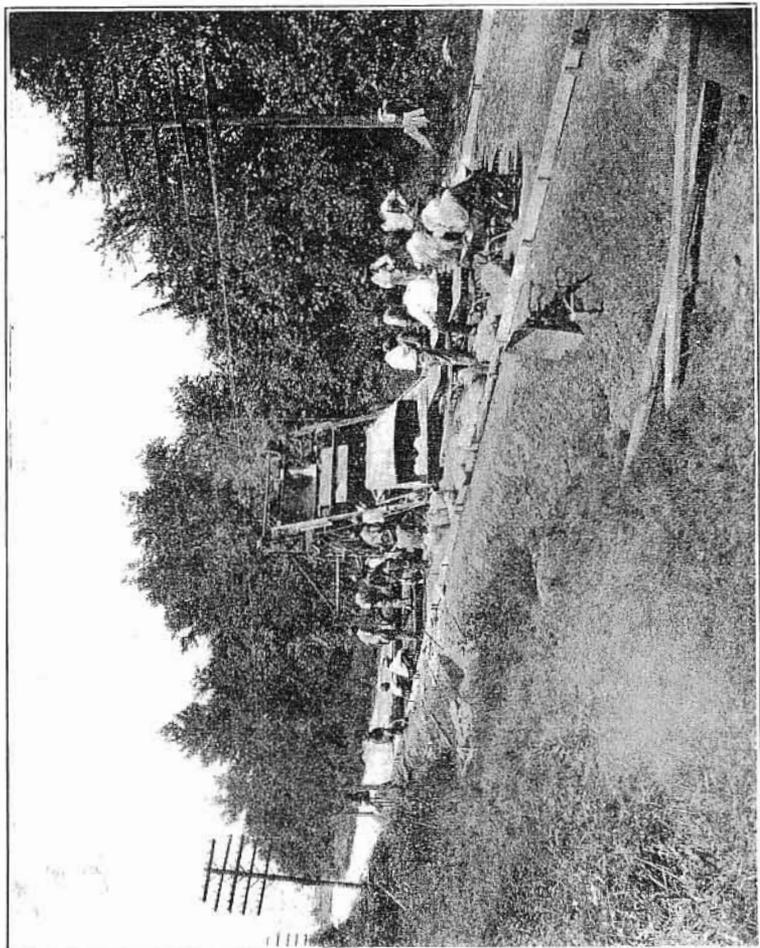
Location	Miles	Type	Estimated Cost	Under What Law
Perry, Houston, Alpin and Adona	26.53	Earth	\$57,268.00	Alexander.

A movement has been started to build a system of roads in this county touching Perry, Adona and Alpin, for which we have furnished plans, etc., a part of this work to be macadam 12 feet wide. Local gravel will be used. Improvement of earth roads is very noticeable. Several permanent culverts and bridges have also been constructed. Several miles of roads through the Forest Reserve will be improved at an early date.

PHILLIPS COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Helena to Lamb's Crossing	1.77	Concrete	\$24,079.00	Alexander.

Road Improvement District No. 1 of Phillips county has just finished the first hard surfaced road in the county. A concrete road 18 feet wide with an average thickness of 7 inches running from Helena to Lamb's Crossing. Mr. Walter Wyne of the Wyne Engineering Company, Helena, was in charge of the construction. This road has called the attention of the land owners to the immediate need of a hard surfaced road from Lamb's Crossing to Marvel. This road as well as others, no doubt, will be under way at an early date. Roads, bridges and culverts are receiving serious and intelligent attention.



PHILLIPS COUNTY, No. 1
Building Concrete Road

Pat Connelly, Contractor, Little Rock

W. E. Wyne, Engineer, Helena

PIKE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Kirby Via Glenwood to Montgomery Co. Line	15.62	Gravel	\$61,252.37	Alexander.

Pike county, Arkansas's diamond field, is taking hold of road matters in earnest. Several miles have been graded and steel bridges are being constructed as rapidly as possible. Preliminary surveys, plans, specifications and estimates of cost have been furnished by the department for a gravel road 12 feet wide and 6 inches deep from Glenwood to Kirby. Local gravel will be used. Petitions are now being signed for the improvement district. It is hoped to carry this road into Hot Springs.

POINSETT COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Marked Tree Via Lepanto to Miss. Co. Line	15.92	Earth	\$20,104.23	Alexander.

When the present road plans are carried out several thousand acres of new land will be placed in cultivation. Most of the main earth roads are now well graded. This was one of the first counties to work the county convicts upon the public roads. Permanent culverts and several steel bridges have been built. The 1915 legislature authorized a road improvement district to build a road from Marked Tree to Harrisburg. The commissioners have been appointed and they no doubt will take immediate steps. We have furnished preliminary surveys, plans, etc., for a well graded earth road running from Marked Tree to Lepanto, connecting with Mississippi county's road system. We are advised that this district is now organized. W. J. Lamb, Osceola is attorney.

POLK COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Sevier Co. Line Via Potter, Mena to Scott Co. Line	50.66	Macadam	\$233,784.30	Alexander.

Preliminary surveys, plans, etc., have been furnished by the department for a macadam road 12 feet wide, running through the county north and south by way of Mena. Petitions are now being signed for an improvement district. This road will be a link of the through road in Western Arkansas. Several steel bridges have been recently constructed. Improvement is also noticeable in the grading of earth roads. The building of good roads in this county will place in easy reach some of the most beautiful scenery in the State.

POPE COUNTY.

Location	Miles	Type	Estimated Law	Under What Law
Arkansas River Via Russellville, Dover, Scottsville to Hector	25.20	Macadam	\$142,560.00	Alexander.
Ark. River North Via Atkins to Appleton	32.10	Macadam	142,965.68	Alexander.

Pope county has in the last few years paid more attention to its roads than ever before. Since all main roads are now well graded attention is being given to further improving them with hard surfaces. A road Improvement District was organized to construct a macadam road 12 feet wide on a 22-foot dump from the Arkansas River through Russellville to Hector, but because of defects in the organization the Supreme Court held it invalid. We have refiled plans, specifications and estimates of cost with the county court and petitions are now in circulation and being re-signed. We have also furnished surveys, plans, specifications and estimates of cost for a macadam road from the Arkansas river through Atkins and Appleton to Rector. A road is also desired east and west through the county which will be a link in the Little Rock-Fort Smith road. Stone is available in the northern part of the county.

PRAIRIE COUNTY.

Road Improvement District No. 1 has recently completed a water-bound macadam road 12 feet wide, from Mesa through DeVall's Bluff to Bisco. This is the first surfaced road in the county and makes an important link in the Little



PRAIRIE COUNTY

Road Graded Across White River Bottoms

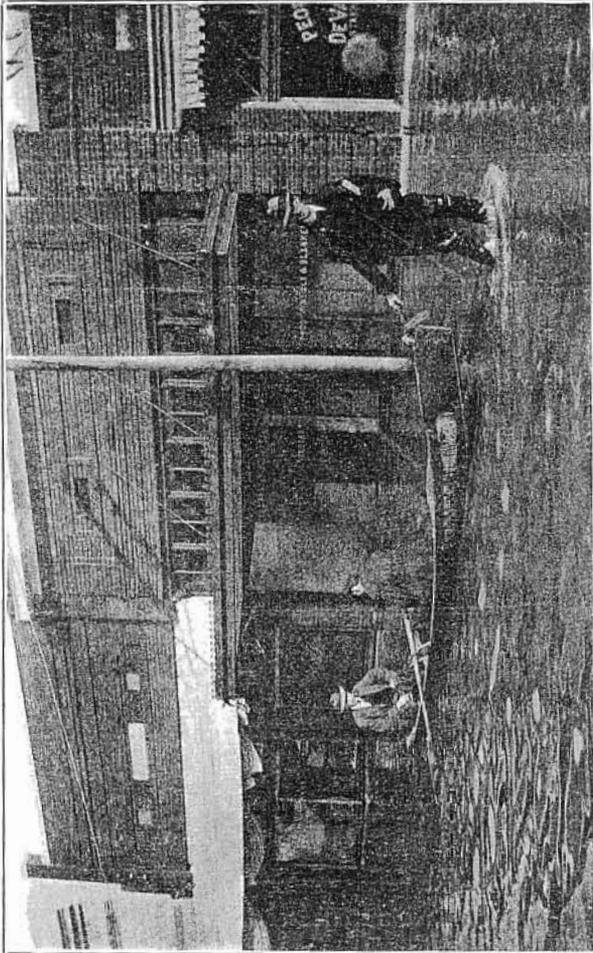
F. A. Pritchett, Engineer, Walnut Ridge



PRAIRIE COUNTY

Macadam Road

F. A. Pritchett, Engineer, Walnut Ridge



PRAIRIE COUNTY, No. 1

Newly Constructed Macadam Road Under Overflow from White River, Without Injury to Road
F. A. Pritchett, Engineer, Walnut Ridge

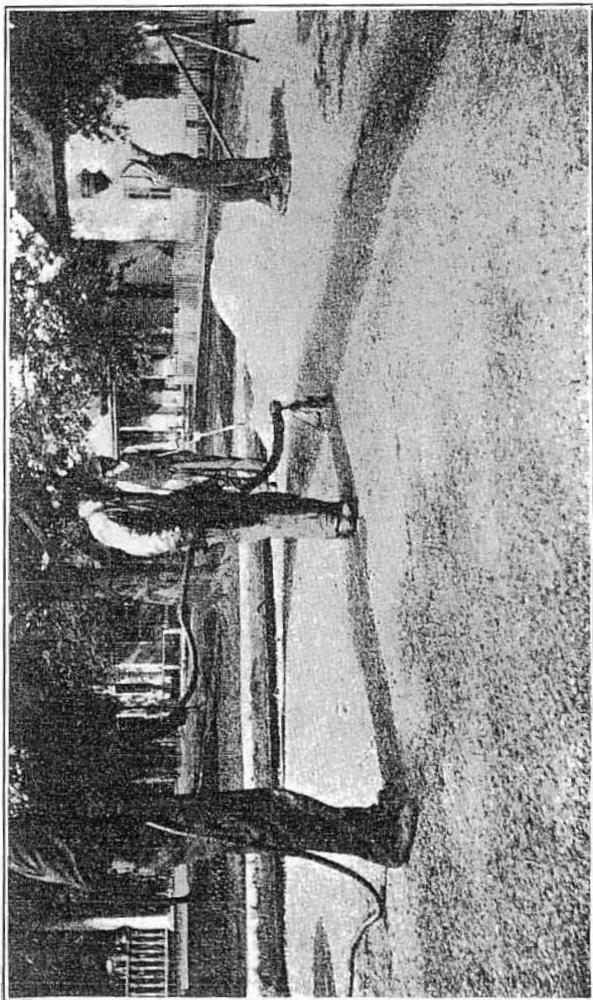
Rock-Memphis Highway. Mr. F. A. Pritchett, Walnut Ridge, was the engineer in charge of construction. Earth roads are in most cases well cared for. There are now many in favor of extending this road west to Hazen, thus securing a road across the county. All stone used is shipped from Little Rock.

PULASKI COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
West 12th Extension, Little Rock.....	11.93	Earth	\$31,200.00	Alexander.
Clear Lake to Toltec Road.....	7.50	Macadam	56,265.20	Alexander.
West 17th St. Extension.....	.20	Asphaltic Concrete	6,000.00	Special Act.

Has developed one of the most comprehensive road systems found in the State. Fifty per cent of all roads are surfaced and 75 per cent of the remaining roads are well graded. Practically all important bridges and culverts are permanent. Trap rock, equal to the New Jersey trap, is available and being used in large quantities. Road Improvement District No. 6 has recently finished the connecting link between Clear Lake and Toltec. A macadam road 12 feet wide was constructed by Brown and Foley under the direction of Dickinson and Watkins, engineers, Little Rock. We furnished surveys, plans, etc., for an extension of the 12th street pike west to the county line. This will be an important road when completed.

Pulaski county has the county engineer system in force. It proves a big step forward. A Road Improvement District is organized to connect up Pulaski county with Jefferson county's concrete. The construction will be macadam 14 feet wide and 8 inches deep on a dump 22 feet wide. Lund and Hill, Little Rock, are engineers in charge of construction. This road will be the missing link in a road from Little Rock to Pine Bluff, Star City and Grady, or a continuous metal surfaced road of approximately 85 miles.



PULASKI COUNTY

Bituminous Macadam Road. Pouring Asphalt. Penetration Method
Dickinson & Watkins, Engineers, Little Rock

RANDOLPH COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Pocahontas Via Maynard to Mo. Line	20.26	Macadam	\$ 75,111.30	Alexander.
Pocahontas Via Reyno to Clay Co. Line	14.31	Macadam	57,735.06	Alexander.
Pocahontas Via Dalton, Ravenden Springs to Mo. Line	35.43	Gravel	126,183.17	Alexander.
Ravenden to Ravenden Springs	5.21	Earth	7,775.00	Special Act.
Biggers, West to Pocahontas - Maynard Road	8.03	Macadam	32,000.00	Alexander.

Road Improvement District No. 1 has completed the construction of a well graded and drained road from Ravenden to Ravenden Springs. The nature of the soil insures an all year road. Grades were reduced down to a maximum of six per cent by re-location. Commissioners were Mr. Joe Decker, chairman, Mr. R. C. Higginbotham, secretary, and Mr. G. W. Poteet, all from Ravenden Springs. Mr. R. Moley, Little Rock, contractor; engineering services were furnished by this department. We have also furnished preliminary surveys, plans, specifications and estimates of cost for macadam roads 12 feet wide from Biggers, west; from Pocahontas to Dalton and Ravenden Springs, and from Pocahontas to Reyno and Maynard. Petitions are about all signed for these four districts. This system of roads, when completed, will serve a large part of the county. There is more enthusiasm in the way of building good roads now than ever before. The department furnished speakers for a road campaign which lasted more than a week. Excellent stone for road surface can be secured within the county. Earth roads have been greatly improved recently.

SALINE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Saline River South to Grant Co. Line.	9.69	Earth	\$16,193.38	Alexander.

Saline county has more available gravel of good quality than any other county in the State. A first-class type of gravel road has been completed leading from Bauxite to Benton. Plans, specifications, etc., have been furnished for a gravel surface 12 feet wide on the River road. Petitions are

now in circulation for this district. The missing link between Little Rock and Hot Springs is in Saline County which we hope to get completed during the coming year. A road is also proposed from Benton toward Malvern. Earth roads and bridges show a very great improvement.

SCOTT COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Okla. Line East Via Bates, Cauthron, Hon to Waldron; Hon North to Sebastian Co. Line toward Mansfield	38.90	Macadam	\$170,959.80	Alexander.
Waldron South to Polk Co. Line	15.40	Macadam	\$61,000.00	Alexander.

Scott county has decided to organize road improvement districts for the purpose of building a north and south and an east and west road. Plans, etc., have been furnished by the department calling for macadam 10 feet wide of local stone and gravel. These roads will be a link in the north and south road through Western Arkansas and will give a connection with Fort Smith. There is as much road enthusiasm in Scott county as can be found anywhere in the State. Plans, specifications and engineering services were rendered on two steel bridges 506 feet in length.

SEARCY COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Van Buren Co. Line North Via Leslie to Marshall with laterals	22.86	Macadam	\$98,931.45	Alexander.
Marshall to Snowball	13.39	Gravel	34,459.70	Alexander.
Vicinity of Marshall	14.00	Earth	14,000.00	Alexander.

Searcy county was one of the first counties to use the Alexander Law. Fourteen miles of well graded and drained road were built in the vicinity of Marshall. Mr. J. B. Smith was the engineer in charge. We have since furnished preliminary plans, specifications and estimates of cost for a graded road from Marshall to Snow Ball and for a macadam road 12 feet wide from Marshall to Leslie. Land owners are now signing petitions for these districts. Roads and bridges are being improved daily. Stone and gravel for metal surface can be secured in practically all parts of the county.

SEBASTIAN COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Huntington to Hartford.....	15.27	Macadam	\$ 98,573.60	Alexander.
Fort Smith Via Greenwood.....	29.70	Concrete	217,868.00	Alexander.
Mansfield to Scott Line.....				

Is one of the original good roads counties in the State. Practically all important roads in the Fort Smith District have been macadamized. This county pays more attention to the proper maintenance of its improved roads than any other county in the State.

Plans, specifications, etc., were furnished for a concrete road running from the Fort Smith District through Greenwood to the Scott county line. Because of a misunderstanding petitions were withdrawn on the day set for the hearing. Plans were also furnished for a macadam road 12 feet wide, running from Huntington to Hartford. The county court purchased the toll bridge over Poteau river in the vicinity of Fort Smith after it had been approved by this department. It is now a free bridge. The building of the Sebastian-Crawford bridge over the Arkansas river at a cost of \$759,000.00 was one of the most important steps taken by these counties.

SEVIER COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Polk Co. Line Via DeQueen, Horatio to Little River Co. Line.....	26.80	Gravel	\$149,557.50	Alexander.
Horatio West to Okla. Line.....	5.21	Gravel	25,097.92	Alexander.

Sevier county has undertaken the improvement of its roads in earnest. Road Improvement District No. 1 has been organized to construct a gravel road 12 feet wide north and south through the county as a part of the through road in Western Arkansas. W. J. Parkes, Pine Bluff, is the engineer in charge of construction. Preliminary plans, etc., were furnished by this department. District No. 2 has also been organized to build a lateral road from Horatio west to

the Oklahoma line. Gravel 9 feet wide will be used. Local gravel will be used on both roads. Earth roads are in fair condition.

SHARP COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Randolph Co. Line Via Wirth, Hardy, Cave City to Independence Co. Line	49.50	Earth	\$94,806.28	Alexander.

Road Improvement District No. 1 is now being organized for the construction of an earth road from Hardy through the county to Wirth. Plans, specifications and estimates were furnished by this department. A gradual improvement of the roads and bridges is very noticeable. Good roads will open some of the best mineral lands in the State. Road metal is available over the entire county.

STONE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Mt. View to Ruddells and Sylamore	9.00	Gravel	\$48,270.00	Special Act.

The building of the demonstration road from Ruddells in Izard county to Mountainview in Stone county has created so much enthusiasm for good roads that a movement is now underway to build an entire county system. This road has demonstrated what good roads with easy grades means. This road was built by Mrs. J. E. Case, the first woman road builder in the State. This department furnished engineering services. Roads in general are being improved as rapidly as funds are available from the 3 mill tax. The county has a large supply of good limestone for metal surface.

ST. FRANCIS COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Madison East to Crittenden Co. Line North to Craighead Co. Line				
Hughes South to Lee Co. Line	64.14	Gravel	\$314,523.29	Alexander.
Wheatley Via Forrest City to Colt	32.51	Gravel	112,272.85	Alexander.

Preliminary surveys, plans, etc., have been furnished for a gravel road 12 feet wide from Madison to the Crittenden county line with laterals to the Lee and Cross county lines; also for a gravel road 12 feet wide from Forrest City to Wheatley. Petitions for these improvement districts are now in circulation. There is no doubt but that both districts will be organized.

The county judge has placed the county prisoners in charge of an experienced man who is making a good showing with them on the county roads. Most of the principle roads have been well graded. When the roads now being provided for are finished Forrest City and St. Francis county will have a direct route into Memphis and Little Rock. Local gravel will be used in St. Francis county.

UNION COUNTY.

Location	Miles	Type	Estimated Law	Under What Law
El Dorado, Hillsboro, Felsenthal and Strong	41.50	Gravel	\$229,655.25	Alexander.
El Dorado to Junction City (Bethel Hill Route)	16.23	Gravel	70,655.09	Alexander.
El Dorado to Junction City (Telford Hill Route)	13.40	Gravel	82,728.58	Alexander.
El Dorado Court Square	.25		2,053.38	Donation.

Union county has constructed several pieces of sand-clay road with good results, under the department's direction, and has also graded and drained several miles of the main roads. Preliminary plans, specifications and estimates of cost have been furnished for a gravel road 12 feet wide from El Dorado to Strong and for a gravel road 14 feet wide from El Dorado to Junction City. These roads will, no doubt, be constructed at an early date. We have also furnished plans, specifications and supervision for a steel bridge near Callion. We have in addition advised with the county judge on various matters. All metal for surface will be shipped in.

VAN BUREN COUNTY.

There has been strong efforts made to build a road from Leslie through Rex, Scotland and Cleveland with a con-

nection into Clinton and into Morrilton. This road no doubt will eventually be built. The roads are being improved now as fast as possible with the funds available from the 3 mill road tax. Stone for wearing surface is available locally.

WASHINGTON COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Morrow to Lincoln	8.50	Earth	\$ 9,285.96	Alexander.
Lincoln Via Prairie Grove; Farmington to Fayetteville	19.50	Macadam	91,445.40	Alexander.
Cane Hill Via Clyde to Skylight	7.63	Macadam	28,432.80	Alexander.
Weddington Via Cincinnati to Summers, with laterals	20.48	Gravel	49,608.94	Alexander.
Slaughter Mountain	.51	Earth	1,000.00	Donation.
Dutch Mills to Lincoln	8.77	Gravel	50,887.40	Alexander.

The demand for good roads in Washington county has come principally from the fruit and berry growers and the farmers generally. Roads have been wonderfully improved in the last few years. The county has also constructed several steel bridges for two of which the department furnished plans, specifications, etc. Preliminary surveys, plans, specifications, etc., have been furnished for graded roads from Morrow to Lincoln; from Cane Hill to Skylight and from Weddington Gap to Summers, on which petitions are being circulated. Plans were also furnished for a macadam road from Dutch Mills to Fayetteville through Lincoln and Prairie Grove. Engineers were furnished for the re-location of the Goshen road over the Slaughter Mountain. Grades were held to a maximum of 7 per cent.

Sentiment is strong for a road from Winslow, through Fayetteville and Springdale, to the Benton county line. This road would be a connection with Fort Smith. Stone and gravel can be secured locally.

WHITE COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
Searcy South to Prairie Co. Line	14.37	Earth	\$ 6,387.00	Alexander.
Judsonia West to Red River Bridge	3.93	Gravel	15,965.47	Alexander.

One of the first road districts under the Alexander Road Law was organized in this county to construct a graded road

from Searcy south, 12 miles to the Lonoke county line. Wm. G. Stahl, Little Rock, is the engineer in charge. Mr. Spense Booth is the contractor. We have also furnished preliminary plans, etc., for a macadam road 12 feet wide west from Judsonia. The roads and bridges are being greatly improved. Stone and gravel are available in some parts of the county.

WOODRUFF COUNTY.

Location	Miles	Type	Estimated Cost	Under What Law
McCrorry to Pumpkin Bend	4.75	Earth	\$ 2,500.00	Donation.
Cotton Plant to McClellan with laterals	19.61	Macadam	126,013.75	Alexander.
Augusta to Fitzhugh	7.45	Macadam	41,242.13	Alexander.
Fitzhugh Via Tupelo to Jackson Co. Line	6.04	Macadam	25,389.98	Alexander.
Jelks Via McCrorry to Cross Co. Line with laterals	15.17	Macadam	61,168.64	Alexander.
Cotton Plant Southwest to Prairie Co. Line	7.23	Macadam	36,718.75	Alexander.

Road improvement districts are being organized for gravel roads 12 feet wide on a rock base from Augusta to Fitzhugh; from Fitzhugh to Tupelo; from McCrorry to Jelks and from Cotton Plant southwest. A majority have signed for all districts, we are advised. Commissioners will be appointed on the Cotton Plant District December 13. Hon. Ross Mathis, Cotton Plant, is the attorney. Preliminary surveys, plans, etc., were furnished on all districts. Woodruff county built several miles of macadam road during 1913 under a Special Act, in the vicinity of Augusta. The earth roads are rapidly being placed in good condition. All stone and gravel will be shipped into the county.

YELL COUNTY.

Road conditions in Yell county are rapidly being improved and some of them have been metal surfaced. Practically all important streams have been provided with steel bridges. Sentiment is strong for a metal surface road from Dardanelle to Paris, thus insuring a Fort Smith connection. This will be a very important road when constructed. Stone and gravel are available in some parts of the county.

**WORK DONE BY THE OFFICE IN THE WAY OF
MAKING PRELIMINARY SURVEYS, PLANS, SPECI-
FICATIONS AND ESTIMATES OF COST.**

Miles surveyed.....	2,232.73
Miles surveyed and sure of construction.....	2,109.02
Estimated cost of construction.....	\$8,651,161.61
Field work from appropriation.... \$	1,319.77
Office work from appropriation....	267.06
Traveling and incidental expenses from appropriation.....	1,111.46
Field work under proclamation....	6,698.41
Office work under proclamation....	5,416.20
Traveling and incidental expenses under proclamation.....	948.72
Total cost of surveys....	\$15,761.62
Average cost of survey per mile.....	\$7.50

From reports from the States named below the average cost of preliminary surveys is given as follows:

Alabama.....	\$34.00
Kentucky.....	20.00
Maine.....	31.44
Maryland.....	123.76
Wisconsin.....	8.00
Rhode Island.....	60.00
North Dakota.....	32.50
Connecticut.....	52.36
Iowa.....	67.50
New York.....	55.00
Vermont.....	24.00
Wyoming.....	16.50
New Hampshire.....	42.50
Minnesota.....	51.09
Idaho.....	16.95
West Virginia.....	32.50
Average cost per mile of States reporting.....	\$41.75

(Other State reports do not give information on this matter.)

CHAPTER IV.

AUTOMOBILE DIVISION.

Table Showing Increase in Automobile License.

License issued 1914—5643.

License issued 1915—8021—42 per cent increase.

License issued 1916—15,000—89 per cent increase.

We would call your attention to the steady increase in the number of automobile license issued. If the same percentage of increase continues we will issue fully 25,000 licenses during 1917 and 40,000 during 1918. These figures are not based upon the percentage of increase of either 1915 or 1916, but are based upon 66 per cent, which is a division of the two.

As shown above the work in this division has grown threefold during this biennial period. We have reduced the work to the minimum and still if we are not permitted to have more help the public is bound to suffer on the account of delays, during the first three months of the year. We should have at least three clerks the first three months and two clerks for the remainder of the year for this division.

For reasons set out in chapter on "Federal Aid" the law should be amended so that all the money derived from automobile license will be paid into the State Treasury to the credit of the Highway Improvement Fund.

The law should be amended to tax all automobiles according to horsepower with a special charge against automobile stages and taxi cabs, and should also be amended to govern transfers.

It is our opinion that hundreds of automobile owners fail to procure license. The law should provide for State inspectors whose salaries should be contingent on the amount received in fees from delinquents.

**FINANCIAL CONDITION OF THE HIGHWAY
IMPROVEMENT FUND.**

Now in State Treasury to credit of the Highway	
Improvement Fund.....	\$77,214.81
Due by county collectors payable first of January	11,685.66
Total.....	\$88,900.47

CHAPTER V.

Land Division.

The State Land Office at this time is not what it is supposed by most people to be, a land selling department. By evolution it has become and should be called a "State abstract office" or an "office for the correction of land titles." Of course as shown by the records of the office the State has quite a lot of lands subject to sale, but the title to these lands is acquired by a tax forfeiture to the State and is very uncertain. Land of this kind is usually purchased from the State for the purpose of removing a cloud from the title in the cheapest manner possible, otherwise a redemption deed is secured for the same purpose.

By furnishing information, deeds to swamp, forfeited and school lands, duplicate certificates of purchase of swamp lands, duplicate deeds to Swamp, Internal Improvement, Seminary, Saline, School, State Band, Real Estate Bank and forfeited lands and redemption deeds to forfeited lands, to abstractors, attorney's and other individuals this office contributes to the removal of clouds from more titles than all the chancery courts of the State.

If by transferring the work of this office to some other department would secure greater efficiency and reduce both the work and the cost to the State, I personally would be glad to have the responsibility removed from my shoulders, but I am unable to see how a change would give more efficient service or reduce the cost thereof without a complete revision of all our land laws. This would be an extremely dangerous procedure for the reason the courts have already passed on the doubtful points of the present laws, therefore, a change in the laws would mean thousands of suits in chancery with a cost of hundreds of thousands of dollars in court cost and attorney's fees. In other words to save a small expense we would be amending the laws now in force to reap a large harvest of court costs and attorney's fees.

The following tables will show the work accomplished only in cases where fees are collected, but the main part of the work cannot be tabulated as it comes to this office in the form of requests for information and advise. Fully 30,000 pieces of mail have been received and answered covering this class of work. Most of these requests are very important and the office to comply intelligently must make an exhaustive research for the information.

There are in the rivers of this State numerous islands, known as unsurveyed islands. They were formed since the original survey was made by the United States Government. Under the Federal and State laws these islands belong to the State, but there is no provision of the law whereby the State may dispose of them and until they become the property of individuals they are not subject to taxation; therefore, I recommend the passage of such laws as will authorize this office to have surveys made of these islands and placed on record subject to sale after a limit of time is allowed for actual settlers to perfect title by purchase.

**LAND SALES FROM NOVEMBER 1, 1914, TO
NOVEMBER 30, 1916.**

**Funds Received for County and State From Sale
of Lands.**

State Funds.

For General Revenue Fund	\$6,584.19
For School Fund	611.40
	\$7,195.59

County Funds.

Funds received for county	9,169.64
	\$16,365.23

**SUMMARY OF AMOUNTS RECEIVED FROM
REDEMPTION OF LANDS.**

For Use of Various State and County Funds.

State Funds.

State General Fund	\$ 497.53
State School Fund	693.63
Sinking Fund	63.20
Pension Fund	299.28
State Capitol Fund	104.77
Insane Asylum Fund	3.08
Permanent School Fund72
	\$1,662.21
Total	

County Funds.

County General Fund	\$2,288.63
District School Fund	616.19
Levee Fund	7.44
	\$2,912.26
Total	

**SUMMARY OF AMOUNT RECEIVED FROM SALE
OF TOWN LOTS.**

For Use of Various State and County Funds.

State Funds.

Total received for account of State General Fund	\$ 288.97
Total received for account of State School Fund . . .	329.77
Total received for account of State Sinking Fund . .	19.07
Total received for account of State Pension Fund . .	152.85
Total received for account of Insane Asylum Fund	1.71
Total received for account of Permanent School Fund	5.27
Total received for account of State Capitol Fund . .	49.24
	<hr/>
Total received for all State Funds	\$ 846.88

County Funds.

Total received for account of County General Funds	\$1,728.24
Total received for account of City General Funds . .	469.98
Total received for account of District School Funds	685.21
Total received for account of Road Funds	71.30
	<hr/>
Total received for all County Funds . . .	\$2,954.73
Grand Total received for all purposes	\$3,741.61

**RECEIPTS FROM FEES PAID INTO THE HIGHWAY
IMPROVEMENT FUND.**

121 Donation Deeds	\$ 121.00
868 Forfeited Deeds	868.00
167 Certificates and Manuscripts	167.00
500 Redemption Deeds	500.00
469 Swamp Land Patents	469.00
434 Dup. Swamp Land Certificates	434.00
240 Dup. Swamp Land Patents	240.00
189 Duplicate Deeds	189.00
101 16th Section Deeds	101.00

STATE HIGHWAY COMMISSION 127

3 Internal Improvement Deeds	3.00
4 Seminary and Saline	4.00
255 Donation Certificates	2,550.00
369 Auto License Transfers	184.50
844 Chauffers Licenses	844.00
1632 Sections Field Notes	1,203.30
Total	\$7,877.80

**GENERAL SUMMARY OF RECEIPTS FROM
LAND DIVISION.**

State Funds.

State General Fund	\$ 7,370.69
State School Fund	1,634.59
Permanent School Fund	5.99
Sinking Fund	82.27
Insane Asylum	4.79
Pension Fund	452.33
State Capitol Fund	154.01
Highway Improvement Fund	7,977.80
Total for all funds	\$17,582.47

County Funds.

County General	\$ 9,169.64
Road Fund	71.30
District School Fund	1,301.40
City General Fund	469.98
Levee Fund	7.44
Total for all funds	\$11,019.76